CHEMICAL LIBRARY
APR 9 1917

JOURNAL
OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION

Vol. V **SEPTEMBER, 1916** **No. 9**

PUBLISHED MONTHLY BY

AMERICAN PHARMACEUTICAL ASSOCIATION

Office of Publication: Bourse Building, Philadelphia, Pa.
Annual Subscription, $4.00; Single Numbers, 35 Cents

Entered as Second-class Matter January 28, 1916, at the Post Office at Philadelphia, under the Act of March 3, 1879.

ANNUAL CONVENTION OF 1917 AT INDIANAPOLIS

American Conference of Pharmaceutical Faculties and National Association Boards of Pharmacy will also convene in Indianapolis just preceding the A. Ph. A. Convention

Bacterzym

The Bacillus Bulgaricus, type A, of the Fairchild Culture, and extract of the entire gastric gland tissue, desiccated upon pure sterilized lactose.

Bacterzym is especially designed for Topical Application, and is put up in vials of 10 grams each, with Powder Blower and without. Trade Prices: 10 gram vials, doz., $6.00; with Powder Blower, doz., $8.00.

Fairchild Bros. & Foster
New York

You can depend on Merck's

Specify
MILLIKEN
PHARMACEUTICALS

See Our Advertisement on Page vii
JOHN T. MILLIKEN & CO., ST. LOUIS

DRUG STORES (Snaps) for sale and positions in all states. Physicians, Veterinarians, Dentists furnished for locations.
F. V. KNIEST, R.P., Omaha, Neb. Est. 1904.

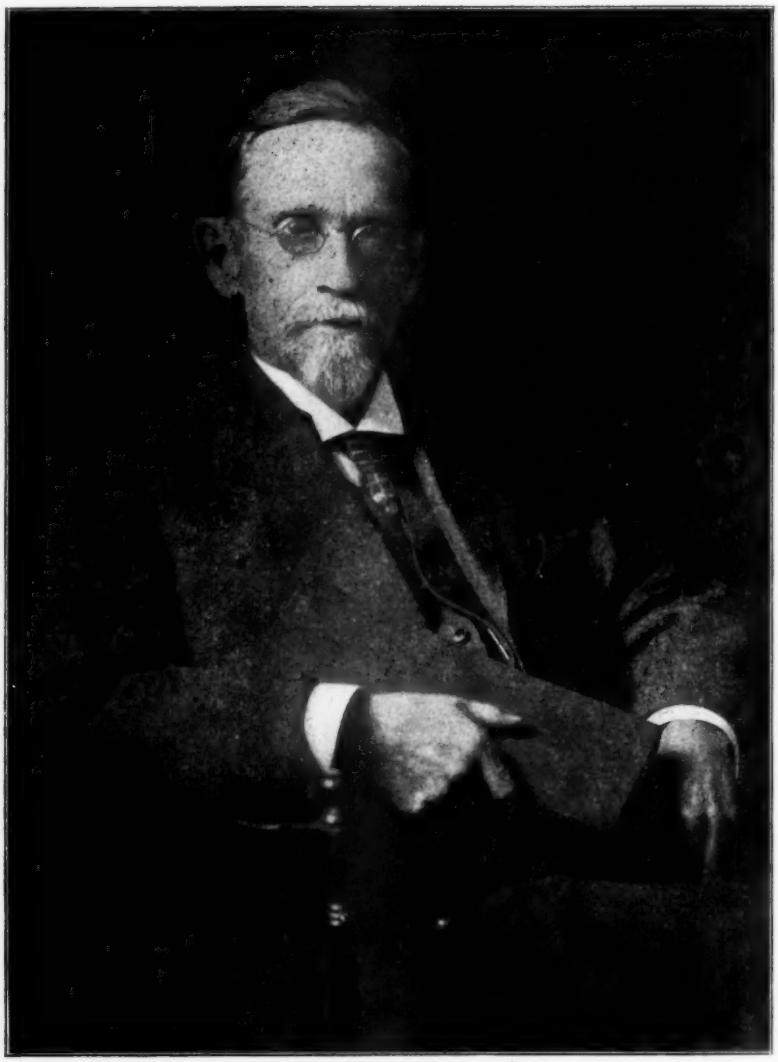
☞ *Table of Contents of this issue will be found on the last page (XVI).*

ALBERT BROWN LYONS, A.M., M.D.

DETROIT, MICHIGAN

Honorary President of the American Pharmaceutical Association, 1913-1914

Chairman, Sub-committee on Tables, United States Pharmacopœia



ALBERT BROWN LYONS

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. V SEPTEMBER, 1916 NO. 9

ALBERT BROWN LYONS, A.M., M.D.

To know Dr. Lyons slightly is to respect him, to know him moderately is to honor him, to know him intimately is to wonder at his versatility and the strength of his mind and character.

When the Pharmacopœia Revision Committee wanted a head for its Subcommittee on Tables, only Dr. Lyons was considered. There were no rivals for the position. This occurred on both of the last two revisions. When the National Formulary Committee sought help outside its own ranks in final judgment of the text, it obtained it plentifully from Dr. Lyons. How he can detect errors, time after time, which fifteen good men have overlooked, is a mystery, but he does it. And the American Pharmaceutical Association is profiting to-day because of the care and judgment of Dr. Lyons in the preparation of the N. F. IV, although he was not a member of the Committee. The book is very markedly better for his services.

This is one reason why the Editor is justified in portraying Dr. Lyons for the second time in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

On pages 1578 to 1581 of the second volume (1913) of the JOURNAL will be found a genealogical sketch of the man, written when he was Honorary President of the Association. At that time Dr. Lyons had been given up to await death, by several of Detroit's most eminent surgeons and physicians. Eight months before that sketch appeared he had been told that he could live only a year, and there was no mistake about the diagnosis. But he is still alive and working, though unable to attend the Association meetings. Each working day finds him at his desk, and his mind is as vigorous as ever. Only a magnificent courage, an unwavering fealty to the opportunities of life, and an undaunted calmness toward the future can account for his being alive. And pharmacy has profited no less in these three and a half years of trial than in a corresponding three and a half years of full vigor. No one expected that he would finish his work on the revision of the Pharmacopœia, and his assistance on the National Formulary was not dreamed of. But both have profited.

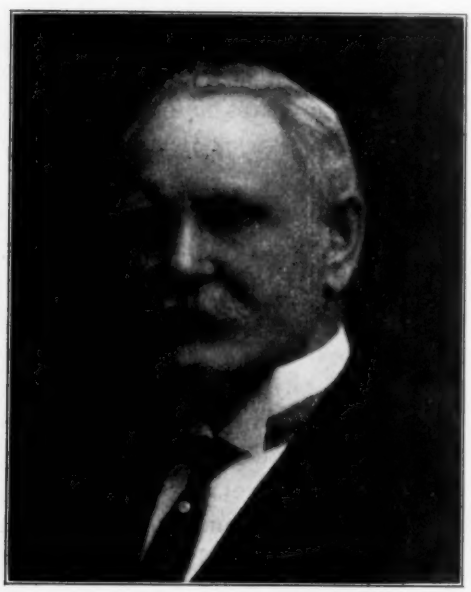
Pharmacy owes to Dr. Lyons the development of alkaloidal assaying in America. He was a pioneer in that subject and the author of the first work in English treating of it. The first standardized alkaloidal preparations placed upon the American market were established by Dr. Lyons.

For botanical nomenclature and synonyms Dr. H. H. Rusby accords to Dr. Lyons the highest authority in America. His judgment on botanical questions is rarely disputed.

His work on the Tables of the Pharmacopœia is less understood because these have not yet come into their normal use, but future generations will appreciate it more. This, too, is pioneer work in so far as making tables, useful in pharmaceutical work, is concerned.

But one does not think of him as a specialist. His breadth of mind and versatility are a continual wonder, and his judgment commands respect in all circles. He has won the highest honors his church can give, he is esteemed as a citizen and honored as a scientist. The British chemical and pharmaceutical societies have both recognized his abilities and have honored him. The American Pharmaceutical Association, in which he has done valuable work, is also glad to value him while he is still among us.

WILBUR L. SCOVILLE.



WILLIAM C. ALPERS
Retiring President, A. Ph. A.

WILLIAM B. DAY
General Secretary, A. Ph. A.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

THE 1916 ASSOCIATION MEETINGS.

THE American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy convened in Philadelphia prior to the Sixty-fourth Annual Meeting of the American Pharmaceutical Association held in Atlantic City.

The Association of Pharmaceutical Faculties continued the work laid out for them during the past several years, relating largely to teaching and examination methods. An interesting report on the prerequisite of graduation from a school of pharmacy before the candidates are admissible to the examinations of boards of pharmacy was presented. This report seems to indicate that such laws have been helpful in providing better qualified dispensers, and have not created anticipated inconvenience by shortage of clerks. Salaries have not advanced in a ratio with other occupations, requiring a relative degree of experience and knowledge. This report should be helpful to legislative committees in states where prerequisite laws are contemplated, and reprints of the report may be had at cost of production, for distribution among druggists in the respective states.

The National Association of Boards of Pharmacy, in order to carry on more effective and efficient work, was compelled to raise the fees for membership and reciprocal registration. The advance made is not disproportionate with the benefits; if a candidate desires to be re-examined when going to another state, he has the privilege; if, however, he prefers to take advantage of reciprocity, the fee of $15.00 probably involves no more expense than would be incurred by taking an examination and without being subject to the worry connected therewith.

The Advisory Committee on Examination Questions which reports to both bodies continued their work, and this is gradually being shaped into a system that will be both helpful and valuable in determining the fitness of candidates.

The Sixty-fourth Annual Meeting of the American Pharmaceutical Association was expected to be the most largely attended convention of its history. However the prospects for a railroad strike and probably also the large number of cases of poliomyelitis reduced the attendance. About four hundred were registered, and on two days of the convention this number was largely increased by delegates of the New York Deutscher Apotheker Verein, who came to honor their fellow-member, President Dr. William C. Alpers, and Philadelphia pharmacists who came to attend the banquet given in honor of Professor Samuel P. Sadtler, who was recently elected Emeritus Professor of the Philadelphia College of Pharmacy, in which institution he taught for nearly forty years.

The accession of membership was larger than ever before in the history of the Association, nearly 450 new members being added during the year.

This meeting, as every preceding convention, evidenced the sincerity of purpose that prompts the members of this Association to advance the cause of pharmacy and their deep concern for efficient service in behalf of the medical profession and those who are served by the coöperation of physicians and pharmacists.

President William C. Alpers' address related largely to internal affairs of the Association and involved the looking up of references in past proceedings, which were not available in Atlantic City, and will require considerable time for proper consideration, therefore the committee to whom the address was referred made only a preliminary report and asked that further time be given for its completion.

The National Formulary was the subject of much discussion, the improvement made in the fourth edition being recognized by everyone. The American Pharmaceutical Association does not seek to utilize this publication as a money-making proposition, but as the research work of the Association is essential to its production, the National Formulary should not only bring in sufficient revenue to defray the immediate expenses of publication, but provide the means for further revisions.

Several hundred formulas of the A. Ph. A. Recipe Book have already been published in the JOURNAL, and others will follow. Assistance given to the committee will redound to the benefit of every pharmacist.

A supplementary report of the Treasurer on the finances of the Association will be found following the report of the first General Session.

Every Section had an abundance of work and every minute of their allotted time was industriously occupied. These proceedings will be published in the JOURNAL and afford instructive reading during the coming months.

Perhaps the interesting announcement should be made that in the presentation of Dr. J. U. Lloyd's paper the discovery of a colloidal alkaloid in ipecac was announced. This discovery was made possible by the separation with hydrous aluminum silicate and had escaped observation in other separatory methods. The name given to this alkaloid is *kryptonine* (the hidden thing), and the formula, according to Waldbott, is $C_{29}H_{40}N_2O_9$.

It may be emphasized that the programs of all the Sections were interesting throughout, and the conduct of the proceedings expedited so that there were no tiresome moments. The nearness to the publication day of the JOURNAL necessitates that further comments must be made in the succeeding issue.

E. G. E.

ORGANIZATIONS.

IN all organizations there are possible extremes, whether the affairs are conducted by a centralized governing body or an attempt is made to have the conduct directed by all members. The former method may lead to an over-centralization and in the interest of a few, while the latter almost invariably leads to disorganization, because there is no uniform policy.

A governing body is essential to all successful organizations, and the duty of the membership is plain, to see that the management subserves the interests of all and does not usurp powers beyond their authority. The fact that the centralized body directs the affairs, occasionally arouses prejudice that gains expression in such terms as "arbitrary," "autocratic," "bureaucratic," etc. In associations frequently, what is ascribed to arbitrary methods is simply a lack of information on the part of those who make the assertions; not from ulterior motives, perhaps, but because they have not followed the trend of the work carried forward by the governing body, and assume that there is undue usurpation of power by the latter.

To secure efficient service the association assigns duties and delegates authority, and those who are charged with conducting the association affairs must have a right to do their own thinking and planning. There is probably no live association in which there is not prevalent criticism, sufficient to keep the officials informed of their observant fellow-members. The officers have been selected from the body, because of their qualifications or peculiar fitness for the work or, there has been a misjudgment. While in the offices that are largely honorary there should be rotation, those requiring constant attention to the activities of the association should be more or less permanent, for in this way knowledge and experience are conserved and may be efficiently applied in the conduct of association affairs. Constructive criticism is helpful and is the spirit which should actuate all members. A working together, counciling together, building up—not destroying—are just as essential to the growth of an association as efficient officers. An association may be considered as a family or as a business, and the conduct, loyalty, deep concern, high appreciation, protection against outward and inward attack, even love and devotion of the members characterize the organization.

E. G. E.

There is no influence for pharmacy more potent and powerful in the accomplishment of good than that of the business and professional men unselfishly banded together for the purpose of promoting the general welfare of pharmacy and when the paramount thought is service.

SIXTY-FOURTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

ATLANTIC CITY, N. J., SEPTEMBER 5, 1916.

(Partial Report of the First General Session.)

The Convention was called to order by President Alpers at 11.20 A. M.

THE PRESIDENT: As president of the American Pharmaceutical Association I call the Sixty-fourth Annual Meeting to order. Following our usual custom, I first call on the Reverend Henry M. Mellen to invoke the aid and guidance of Deity in our present convention.

REV. HENRY MERLE MELLEN: Almighty God, our Gracious Heavenly Father, we are Thy servants. Thou hast made us heirs of all mysteries and secrets of this earth upon which we dwell, and Thou hast said, "go thou into my vineyard and I will give thee of the fruitage of the earth." We are gathered here at this time representing so many of the medical men of the world around about us, so many of the great natural resources which Thou hast hidden in the bowels of the earth, which thou shalt dig for and grub for, and bring them to the science of men that they may be healing among the nations. We thank Thee for this convention which comes in our State, and we pray for Thy blessing upon all its deliberations. We pray that from this gathering there may go forth greater knowledge and greater instruction and greater education, so that mankind may be served in the greatest sense, because of all that has taken place in this convention. We pray our Lord that Thou wilt remember Thy servants, President, Secretary and all the officers and all that convene in our city in this capacity at the present time. Bless their coming in and their going out. Bless them as they shall leave our city to go to their places of respective business. Bless them in their endeavor to bring healing to men and women. Bless them in their efforts to bring mysteries from the bosom of mother earth, and so bless them and bless them all that the knowledge of the Great God might cover the whole earth at least even as the waters cover the sea. We ask it for Thy name's sake. Amen.

THE PRESIDENT: The Local Secretary wishes to make an announcement before we proceed.

MR. HOLZHAUER: As Chairman of the Local Committee I welcome you all and we want you to enjoy yourselves every moment that you are here. You will find in the entertainment booklet a ticket for to-night for the President's Reception. This was arranged for the Hotel Chalfonte, but at the last moment, for reasons, circumstances beyond our control, we were compelled to change it and it will be held at the Hotel Traymore, not the Chalfonte, to-night at nine o'clock.

In the booklets you will find a ticket for the Steel Pier, this pier, which will admit you downstairs to the performances. One for the Steeplechase Pier, the one just adjoining to my left and one for Young's Pier, the Million Dollar Pier. The ticket for the Million Dollar Pier has been added, quite largely because a great many people would be interested in seeing the drawing of the pound net which takes place at Young's Pier twice a day, 11.30 in the morning

and 4 o'clock in the afternoon, in which you may see fish of all kinds gathered together in those nets, possibly a shark. I don't know about that. Then on Thursday evening there will be a theatre party at the Apollo Theatre, and after the theatre there will be refreshments served at the Hotel Traymore. It will be necessary for you to exchange those theatre tickets that are in your books at the theatre for reserved seats, and you may do that at any time to suit your pleasure.

The Heinz Pier Company has sent an invitation to the Association to visit their pier, which is in the direction of the Inlet, and they offer their reading rooms and their rest rooms there for the use of the society free.

To-morrow noon, at 1 o'clock, there will be a ladies' luncheon given at the Breakers, which is in this direction. That will be in charge of the ladies of New Jersey who will attend to that, and they hope for the attendance of every lady visitor.

You undoubtedly will find that there have been some mistakes made by your Local Secretary and your Local Committee. I have no doubt you will find them, but I ask that when you do find them you will throw the mantle of charity over them and remember that they are mistakes of the head and not of the heart.

THE PRESIDENT: The next order of business is the President's Address.

(The Vice-President takes the chair.)

(The President then read his address.)

THE VICE-PRESIDENT: Members of the American Pharmaceutical Association you have heard the reading of an address by the President of this organization. This address is filled with meat, with food for thought. What is your pleasure regarding it?

MR. JACOB DINER: Mr. Chairman, I move that the address of the President be received and referred to a Special Committee on the President's Address for consideration and recommendations to be presented at a subsequent meeting.

(This motion was seconded and carried.)

THE VICE-PRESIDENT: In pursuance of that resolution I will appoint the following as members of that committee. During the reading of this address I have felt the importance of selecting for members of such a committee men who would represent the Association not only intellectually but geographically. I therefore have selected the following: James H. Beal, Illinois, Chairman; Rufus A. Lyman, of Nebraska; Samuel C. Henry, of Philadelphia; Martin I. Wilbert, of the District of Columbia; Lewis C. Hopp, of Ohio.

(The President resumes the Chair.)

THE PRESIDENT: I have the great pleasure of introducing to you Dr. Solomon Solis Cohen, of Philadelphia, who will address the Association.

DR. COHEN: Mr. President and friends of the American Pharmaceutical Association: I presume that most of you are ready for a more material repast than that which I had intended to offer, and I shall not detain you. I beg to express to you my thanks for the honor of your invitation and to wish your Association and its members all success in the great work which you have undertaken.

The subject of the physician's interest in the pharmacopœial revision is one which I can barely touch upon, cannot attempt to expound in the very few minutes that it would be proper now to keep you here. The new Pharmacopœia, in which many of you and your officers and your co-laborers have toiled,

as well as many physicians who have tried to coöperate with you, will speak for itself. The National Formulary, which I have seen—I have not yet seen the new Pharmacopœia bound, because I understand the mechanical delays in producing it have been such as to have kept it back; the great demand for it, the much larger number of copies which are to be issued than those which were anticipated, and the difficulties which all publishers and printers are now experiencing in obtaining supplies and the like have kept back the new Pharmacopœia, and even the members of the Revision Committee have not received their copies, doubtless it will be shortly—but the National Formulary I have seen and I want to congratulate you on it.

The best of friends sometimes differ and we form different opinions as to the usefulness and desirability of various things. I once had a colored boy for a driver who belonged to a debating society and he told me that one of the questions in their debating society was, "Which am de more useful, the sun or the moon?" and I asked him what the conclusion had been. Well, he says, "The speech that I thought the best was this," he says, "the moon am the more useful for the moon shines at night in the darkness when the sun shines in the day when you ain't got no use for it."

Well, I think we have got some use for the standards in the National Formulary, although they are shining in the bright daylight. The Pharmacopœia, unfortunately—I say this from a medical viewpoint, from the viewpoint of a practising physician, from the viewpoint of a teaching physician and from the viewpoint of a consulting physician—has left out a good many drugs which might well have been included. The consensus of opinion and discussion that I have not the time to go into now, resulted in their exclusion. There are a great many physicians in the United States who want to use and want to prescribe for their patients some of the drugs which are no longer official in the United States Pharmacopœia, and when they prescribe for them they want to get what they prescribe and not something else. They want to get a drug which is definitely described or authoritatively standardized. They want a legal standard, a standard to which the dispensing druggist may be legally forced to conform.

Now the Congress of the United States in its wisdom passed an act which stated that the drugs dispensed in the United States of America should conform to the standards established by the United States Pharmacopœia and the National Formulary. Every time, in the discussions in the Committee of Revision, and especially in the discussions of the committee on scope, of which I had the honorable misfortune to be the chairman, that the question arose as to the exclusion of this, that or the other, somebody said, "Let the National Formulary have it." Well, the National Formulary got it and there it is, and it is shining in the broad daylight, and it is going to be useful, useful to the druggist, useful to the doctor, and, more than all, useful to the patient; because when a patient selects a physician to treat him he is entitled to the fullest, broadest, wisest, best treatment that that physician knows. Now the best treatment known to the physician in a particular emergency at the bedside may be to let the patient alone. That is very often the case, give nature a chance and let the patient get well. But a great many times, if you simply trust to nature the patient won't get well. The natural forces at work are the forces of destruction, but not of construction, of dissolution and not of recuperation, and the physician is called upon to interpose between life and death and it may be that

the very thing that will carry the patient over the crisis that is impending, that will be the featherweight in the scale, so that the balance may go to the side of life and not to the side of death, may be some drug that is not in common use. It may be some drug that every pharmacologist has not tested and studied. It may be some drug that some old woman has told him about.

Benjamin Rush, who signed the Declaration of Independence and was the greatest ornament of the medical profession of the United States in his day, perhaps inspired by some saying of Paracelsus, said this—I have never seen it in his published writings, but at the College of Physicians in Philadelphia I came across a manuscript notebook kept by one of the students of Benjamin Rush in which were recorded Benjamin Rush's lectures, and in that manuscript notebook I read this, and it stuck in my mind ever since, and I thank God I did read it in the early stages of my professional career: "Never be afraid to learn," said Rush to his students. "Never be afraid to learn, even from a quack or an old woman."

Now the drug that will save my patient at this moment may be something that I learned from a quack or an old woman, and it may not be in the United States Pharmacopœia, and I want to get it, and I want to get it pure and I want to get it right, I want a standard for it, and the National Formulary is the place for it and there it is and there it ought to be.

I have no sympathy with that narrow vision which is in a measure dominating the medical teaching in some quarters at the present day, and of which the most apt description is that of the poet Shelley when he speaks of the "Ignorance that makes a blank of all beside itself"; that narrow vision which is content with limited experience and ignorance of the whole world outside.

Now there is a great deal of experience in the use of drugs and pharmaceutical preparations of various kinds which has not got into the orthodox medical text-books; there is a good deal that has not got into the text-books and has not got into the brains of the medical teachers yet, that is extremely useful. If I had the writing of a pharmacopœia alone and unaided—or rather the selection of the things to be written about, for I trust the writing to experts like Remington, Lloyd, Alpers and the others—I would include in the scope of that Pharmacopœia everything at any time, anywhere at any time in the world that was found useful in the fight against disease. That would not mean that every medical student and every pharmaceutical student has to study about it. Why, Lord help you, there isn't one of us here who could pass a State Board Examination. We don't study to pass examinations. We study to work and when we want to know what the atomic weight of oxygen or anything else is, may be sixteen or may be fifteen and a fraction, when we want to know what the accepted atomic weight of something is, we go to the atomic tables. That is all we are compelled to know, where to get the information.

Any examining board that hunts out of the way things to trap the student with, whether it is an examining board in law or whether it is an examining board in medicine, whether it is an examining board in pharmacy, conclusively demonstrates its incompetency.

What I want to find out when I examine my students is not what they are ignorant of, but what do they know. What have I taught them? That is the greatest question that ever comes to the attention, "How well have you done your work?" Now the answer to that is in the papers of the pupils first, and in the lives and work of our pupils afterwards. And the examiner only convicts

himself of not having taught that which he ought to have taught when he selects strange, abstruse, and tricky things for the sake of flunking the student.

And so it is all through life, to be helpful we want two things, we want ideals and we want courage. Now I am glad to see that the pharmaceutical profession has both, and is fast becoming more and more both a profession of courage and a profession of ideals. You have set to work to lift your standard of qualification for membership in the pharmaceutical profession. We also have tried to lift the standard of membership in the medical profession, but there is always a danger of going too far in efforts of that kind. You want the best possible men as pharmacists, previously trained in the best possible way, but your entrance qualifications must be relevant. They must be such qualifications as a student needs to study pharmacy, not those qualifications which he needs to study geography. A high school graduation is, I think, right. A good high school course, a broad high school course, not the high school courses that have been forced upon us in many quarters which are full of fads and irrelevancies, but the good old-fashioned, broad foundation that came from such a course, for example, as my Alma Mater, the Central High School of Philadelphia, such a course is a proper and necessary and excellent qualification for the study of pharmacy and the study of medicine.

But it is not necessary, in order that a man shall know the difference between sodium bicarbonate and arsenic trioxide that he should be able to explain just what was at the back of Shakespeare's mind when he wrote Macbeth.

Abraham Lincoln once wrote a note to Edwin Stanton which read about like this: "Please appoint Mr. So and So, Colonel of the Fifteenth, whatever it was, New Jersey regiment, irrespective of his knowledge of the exact shade of Julius Cæsar's hair."

Now don't go into examining pharmacist students before you admit them to your College of Pharmacy on the color of Julius Cæsar's hair. Courage is necessary sometimes to stand out against that which parades as progress and is, really, merely intolerance, narrowness and jealousy. A good deal of what is said and attempted in the way of restricting entrance to the professions is the opposite of what was once called the trades union method. It is to exclude from the guild. We are in, and keep the other fellow out. Just like the people who are going to restrict immigration, they came over on the Mayflower and the fellow that comes over on the Flower of May will stay away. But they came from the same place. As my friend Arthur Stephenson once said, whose grandfather came over on the Mayflower, but if he only came yesterday he would have as good a right here as I have. We have got in, keep the other fellow out. The attempt is being made to restrict the professions to rich men's sons. I once told a committee before which I argued on the question of qualifications for the study of medicine, "What is the use of all that qualification? Write in simply 'Rich father' and let it go at that."

We want men properly trained, broad minded, properly grounded in all the relevancies that qualify them to study the particular profession which they are about to enter, and if they have been through college, so much the better, it makes them better, broader men in every respect, but you have no right by law to restrict the man's opportunity to serve his fellows by measuring his knowledge of English literature or Homer, Virgil, or any other ancient poet.

Now the ideal pharmacist is the man who devotes himself to the attribute of pharmacy. It is unfortunately necessary, especially in some rural districts—

not so much now that our railroad communications have been so extended, but still necessary here and there for others than pharmacists that drugs be sold in the drygoods shop and grocery store and the hardware emporium, but not in a big city. There are plenty of china shops in Philadelphia. You can have all kinds of grocery stores in Atlantic City. The true pharmacist is not the man who goes into the selling of merchandise with the putting up of prescriptions as a side issue, but the man who offers his services as a competent prescription dispenser, and if necessary also obliges his patrons by dealing in things related to drugs, as catheters, and thermometers, and the various other things that are required in the sick room, toilet, and the treatment of patients.

Now I want to see pharmacy elevated to the rank of a profession, of a real profession. It was at one time part of the medical profession, physicians gathered and compounded their own drugs. I remember there was an old physician and poet who lived in Spain in the year 1050, and who wrote this in one of his letters—he was apologizing to a friend for not having answered his letter sooner—and he said: "There are many who speak about me falsely in my presence and others who believe what they say, and the result is that I must occupy myself all day and night, and even in those precious hours that belong neither to the day nor to the night, with the follies of medicine wherof there is no evil." And he also said: "I mix drugs and the people take them, and what will happen then, God only knows." And there was another physician too, his contemporary, who, writing for the Synagogue a prayer for a Jew, put in this way: "On mead, unwaving grain, on my wood, let drops of blessing fall that all thy children may have bread and healing pay for it." That is the practice of the mead and the wood, fertilized by the dew, vivified by the dew and made by the pharmacist into healing for all mankind.

Take that for your ideal. You are the appointed agents of healing. The physician must call upon you.

If our thoughts are to be guided by the terrible struggle that is now going on about us, around us, the other side of the world, we may remember that on one side their great fault was said to be lack of munitions. It was also said to be faulty munitions. Now you are the munition makers, you are those who are to provide the weapons wherewith the physician in his strategy and his tactics attempts to overcome disease, prevent epidemics and save human life. If these munitions are not sufficient, if the scope be unduly restricted, if those munitions are not perfect, if the standard be not prescribed and adhered to, the efforts of the physician must be largely hampered if not altogether hindered. Therefore we look to you to raise the ideals of your profession, to coöperate with us in our great effort for humanity.

And I am reminded in conclusion, when I think of the shadows all about us, of that brave speaker of the Rhode Island Assembly a hundred years ago, when there came a great day of sudden darkness, and someone, some frightened legislator arose in the Assembly and said, "Mr. Speaker, the Day of Judgment has come. Let us adjourn." And the Speaker said, "Light the candles, and if it be the Day of Judgment let the Lord's Messenger find us at our work."

THE PRESIDENT: Dr. Cohen, the applause with which your address was greeted shows not only how popular you are with us but also how much we enjoyed your address. Let me again in behalf of this Association express our sincere thanks for your presence and your remarks.

We have with us a great many delegates from various associations, pharmaceutical and otherwise, local associations, national associations, also representatives

of the government, the army, the navy, the health corps, and I extend to all these —I think most of them are members of the Association, but if they are not I extend to all these the privilege of the floor and I hope that they will consult with us and that we will have occasion to hear from them in the course of our meetings. I now declare a recess of ten minutes to secure the members of the Nomination Committee. The delegates from each state or the members from each state will assemble and appoint two from each state and report in ten minutes.

(Recess taken for ten minutes.)

NOMINATING COMMITTEE.

The roll of states was called and the following members of the nominating committee were announced: Colorado, E. G. Fine; District of Columbia, M. I. Wilbert and S. L. Hilton; Connecticut, Thos. Main and J. A. Leverty; Illinois, S. A. Williams and J. A. Becker; Indiana, F. W. Meissner and F. E. Bibbins; Kansas, L. E. Sayre; Louisiana, Philip Asher and J. R. Keeny; Massachusetts, E. L. Patch and J. G. Godding; Maryland, A. R. L. Dohme and J. B. Thompson; Michigan, J. O. Schlotterbeck and L. A. Seltzer; Minnesota, E. L. Newcomb; Missouri, O. F. Claus and Francis Hemm; Nebraska, R. A. Lyman and N. P. Hansen; New Jersey, G. M. Beringer and J. M. Andrews; New York, W. C. Anderson and C. O. Bigelow; North Carolina, W. W. Horn and C. B. Greer; Oklahoma, W. R. Jarrett and C. H. Stocking; Ohio, J. C. Otis and C. A. Dye; Oregon, Geo. C. Blakely; Pennsylvania, J. C. Wallace and Robert Fischelis; South Dakota, F. W. Halbkat and H. A. Eaton; Tennessee, J. T. McGill; Texas, W. H. Cousins and E. G. Eberle; Virginia, W. F. Rudd; Washington, A. W. Linton; West Virginia, F. B. Haymaker; Cuba, J. P. Alacan and Francisco Taquechel.

President Alpers appointed five members at large as follows: H. M. Whelpley, F. H. Freericks, H. V. Arny, J. A. Koch and H. P. Hynson.

It was announced that the Nominating Committee would meet at once after the adjournment of this general session.

Upon motion the first general session was adjourned.

WM. B. DAY,
General Secretary.

The transactions of the Nominating Committee will be reported in a succeeding issue of the JOURNAL, and the report of the General Sessions continued. For the information of the members not present and who may desire to know, a list of the officers for the ensuing year is appended: President, Frederick J. Wulling, Minnesota; honorary president, J. O. Burge, Tennessee; first vice-president, Leonard A. Seltzer, Michigan; second vice-president, L. E. Sayre, Kansas; third vice-president, Philip Asher, Louisiana.

Members of the Council: James H. Beal, William C. Alpers and Harry B. Mason.

Officers of the Council: Chairman, Lewis C. Hopp; vice-chairman, S. L. Hilton; secretary, Joseph W. England; general secretary, William B. Day; treasurer, H. M. Whelpley; reporter on the Progress of Pharmacy, Editor of the JOURNAL, E. G. Eberle.

Indianapolis was selected for the 1917 meeting of the Association.

A list of those who registered during the Atlantic City meeting follows:

LIST OF MEMBERS IN ATTENDANCE, ATLANTIC CITY MEETING, A. PH. A.

(Copied from the Official Register.)

Jose P. Alacan, Havana, Cuba.
Miss B. Alfonso, Havana, Cuba.
Miss Clara Alpers, New York City.
William C. Alpers, Cleveland, Ohio.
Mrs. W. C. Alpers, Cleveland, Ohio.
William C. Anderson, Brooklyn, N. Y.
Mrs. William C. Anderson, Brooklyn, N. Y.
Rachel French Andrews, Woodstown, N. J.
George M. Andrews, Woodstown, N. J.
Franklin M. Apple, Philadelphia.
Mrs. Franklin M. Apple, Philadelphia.
Fred W. Archer, Boston.
Mrs. Fred W. Archer, Boston.
H. V. Arny, New York City.
Philip Asher, New Orleans.

Miss Edith M. Barnes, Roanoke, Va.
R. P. Barnes, Roanoke, Va.
H. C. Barnes, Roanoke, Va.
Miss Mabel Barnhill, N. C.
Mrs. J. H. Beal, Urbana, Ill.
J. H. Beal, Urbana, Ill.
Louis Buzer, New York City.
Ernest Berger, Tampa, Fla.
Mrs. George M. Beringer, Camden, N. J.
George M. Beringer, Camden, N. J.
I. A. Becker, Chicago, Ill.
Francis E. Bibbins, Indianapolis, Ind.
C. O. Bigelow, New York City.
Russell T. Blackwood, Philadelphia.
Mrs. R. T. Blackwood, Philadelphia.
L. G. Blakeslee, St. Louis, Mo.
George C. Blakeley, The Dalles, Oregon.
Mrs. Geo. C. Blakeley, The Dalles, Oregon.
C. F. Booth, Buffalo, N. Y.
Edwin M. Boring, Philadelphia.
Mrs. Theodore J. Bradley, Boston, Mass.
Theodore J. Bradley, Boston, Mass.
F. B. Brill, Bridgeport, Conn.
Miss Clara Brill, Bridgeport, Conn.
Mrs. F. B. Brill, Bridgeport, Conn.
C. S. Brinton, Haddonfield, N. J.
Helen Ritz Burns, Lewistown, Pa.
Burton T. Bush, New York City.
Garrett Byrnes, Maplewood, N. J.
H. C. Christensen, Chicago, Ill.
Mrs. Otto F. Claus, St. Louis, Mo.
Otto F. Claus, St. Louis, Mo.
Charles J. Clayton, Denver, Col.
W. L. Cliffe, Philadelphia.
B. Olive Cole, Baltimore.
E. Fullerton Cook, Philadelphia.
Mrs. E. Fullerton Cook, Philadelphia.
Albert D. Cooley, Seaside Heights, N. J.
Zada M. Cooper, Iowa City, Ia.
E. G. Cox, Craig, Mo.
Eugene H. Cox, Atlanta, Ga.
Mrs. Eugene H. Cox, Atlanta, Ga.
John Culley, Ogden, Utah.
Mrs. Harry W. Crooks, Newark, N. J.
Harry W. Crooks, Newark, N. J.

V. C. Daggett, New York City.
William E. Danhauer, Owensboro, Ky.
William B. Day, Chicago, Ill.
Miss Charlotte Day, Chicago, Ill.
Miss Helen Day, Chicago, Ill.
J. Atlee Dean, Philadelphia.
Mrs. J. M. H. Deemer, Atlantic City.
J. M. H. Deemer, Atlantic City.
Mrs. J. G. Diaz, Havana, Cuba.
J. G. Diaz, Havana, Cuba.
Mrs. Geo. M. Dicker, Newark, N. J.
Geo. M. Dicker, Newark, N. J.
F. W. Dickson, Baltimore, Md.
Mrs. F. W. Dickson, Baltimore, Md.
August Diehl, Brooklyn, N. Y.
Emma L. Diekman, New York City.
Mrs. Geo. C. Diekman, New York City.
Geo. C. Diekman, New York City.
C. Lewis Diehl, Louisville, Ky.
Mrs. C. Lewis Diehl, Louisville, Ky.
Jacob Diner, New York City.
Mrs. Jacob Diner, New York City.
Alfred R. L. Dohme, Baltimore, Md.
Alex. Dubell, Mt. Holly, N. J.
Mrs. Alex. Dubell, Mt. Holly, N. J.
Charlotte I. Du Bois, Catskill, N. Y.
W. L. Du Bois, Catskill, N. Y.
A. G. Du Mez, Madison, Wis.
Mrs. H. A. B. Dunning, Baltimore, Md.
H. A. B. Dunning, Baltimore, Md.
Theo. Drake, Baton Rouge.
Mrs. Theo. Drake, Baton Rouge.
Clair A. Dye, Columbus, Ohio.
Mrs. Clair A. Dye, Columbus, Ohio.

E. G. Eberle, Philadelphia.
Mrs. E. G. Eberle, Philadelphia.
Clyde L. Eddy, New York City.
Mrs. Frank R. Eldred, Indianapolis.
Frank R. Eldred, Indianapolis.
Mrs. Louis Emanuel, Pittsburgh, Pa.
Louis Emanuel, Pittsburgh, Pa.
H. Englehardt, Baltimore, Md.
Joseph W. England, Philadelphia.
Elizabeth R. England, Philadelphia.
Mrs. Joseph W. England, Philadelphia.

Mrs. Ellis E. Faulkner, Delton, Mich.
Ellis E. Faulkner, Delton, Mich.
M. R. Feltwell, Sewickley, Pa.
Miss C. Ferrer, Havana, Cuba.
Robert P. Fischelis, Philadelphia.
Eben G. Fine, Boulder, Colo.
Mrs. E. G. Fine, Boulder, Colo.
Chas. M. Ford, Cambridge, Mass.
William M. Fouch, Baltimore, Md.
James Foulke, Jersey City, N. J.
Jamella Fox, Philadelphia.
J. M. Francis, Detroit, Mich.
Mrs. Louise Diehl Frank, Haddon Heights, N. J.
F. S. Frankfurter, New York City.
Katherine Freel, New York City.
Frank H. Freericks, Cincinnati, Ohio.
Leo H. Fried, Jersey City, N. J.

John C. Gallagher, Jersey City, N. J.
E. H. Gane, New York City.
Irving P. Gammon, Boston.
Mrs. Irving P. Gammon, Boston.
Antonia M. Garrego, Havana, Cuba.
St. Claire Ransford-Galf, New York City.
Mrs. S. Gelabert, Havana, Cuba.
Mr. S. Gelabert, Havana, Cuba.
C. Thurston Gilbert, Atlantic City.
Mrs. T. P. Gillispie, New Haven, Conn.
W. Curtis Glover, Lawrence, Mass.
F. T. Gordon, Philadelphia.
John G. Godding, Boston, Mass..
Mrs. John G. Godding, Boston, Mass.
J. Russell Graham, Philadelphia.
C. P. Greyer, Morgantown, N. C.
Mrs. L. W. Griffin, Boston, Mass.
Geo. E. Grover, Somerville, Mass.
Mrs. Geo. E. Grover, Somerville, Mass.

G. Hahn, Ft. Hancock, N. J.
F. W. Halbkat, Webster, S. D.
Neils P. Hansen, Lincoln, Nebraska.
H. L. Haussamen, Grafton, No. Dak.
J. F. Hancock, Baltimore, Md.
Mrs. J. F. Hancock, Baltimore, Md.
Miss Lillian Hancock, Baltimore, Md.
William T. Hankey, Cleveland, Ohio.
Mrs. William T. Hankey, Cleveland, Ohio.
H. L. Harris, New York City.
Susannah G. Haydock, Philadelphia.
Mrs. F. B. Haymaker, Clarksburg, W. Va.
F. B. Haymaker, Clarksburg, W. Va.
Mrs. S. C. Henry, Philadelphia.
Samuel C. Henry, Philadelphia.
Charles S. Herron, Baltimore, Md.
S. L. Hilton, Washington, D. C.
Lewis M. Hirls, Burlington.
C. W. Holzhauer, Newark, N. J.
Mrs. Chas. Holzhauer, Newark, N. J.
Chas. Holzhauer, Newark, N. J.
Lewis C. Hopp, Cleveland, Ohio.
Mrs. Lewis C. Hopp, Cleveland, Ohio.
Warren W. Horne, Fayetteville, N. C.
Mrs. G. H. Horning, Roselle Park, N. Y.
Jeannot Hostmann, Hoboken, N. J.
Mrs. Jeannot Hostmann, Hoboken, N. J.
E. V. Howell, Chapel Hill, N. C.
Alfred B. Huested, Delmar, N. Y.
Mrs. Alfred B. Huested, Delmar, N. Y.
Henry P. Hynson, Baltimore, Md.

Ralph C. Jennings, New York City.
Edward B. Jones, Mt. Holly, N. J.
Henry A. Jorden, Bridgeton, N. J.
Mrs. Henry A. Jorden, Bridgeton, N. J.
John M. Jordan, Charleston, S. C.

Claire Kantrowitz, New York City.
Hugo Kantrowitz, New York City.
Mrs. Hampton Ray Kenaston, Bonesteel, So. Dakota.
Ida E. Kebler, Washington, D. C.
L. F. Kebler, Washington, D. C.
J. Roy Keeny, New Orleans, La.
H. A. Keith, Lake Preston, So. Dak.
E. J. Kennedy, New York City.
C. Mahlon Kline, Philadelphia.
W. H. Knoepfel, Scranton, Pa.
Mrs. W. H. Knoepfel, Scranton, Pa.
Miss Florence Koch, Pittsburgh, Pa.
J. A. Koch, Pittsburgh, Pa.
Mrs. C. S. Koon, Muskegon, Mich.
Charles S. Koon, Muskegon, Mich.
S. Kischam, New York City.
Julius Kramer, New York City.
R. A. Kuever, Iowa City, Ia.

Mrs. E. H. La Pierre, Boston, Mass.
Elie H. La Pierre, Boston, Mass.
Mrs. J. Leon Lascoff, New York City.
J. Leon Lascoff, New York City.
Charles H. La Wall, Philadelphia.
Millicent R. La Wall, Philadelphia.
Robt. S. Lehman, New York City.
Jos. L. Lemberger, Lebanon, Pa.
Mrs. Jos. L. Lemberger, Lebanon, Pa.
I. E. Leonard, Atlantic City, N. J.
Mrs. J. A. Leverty, Bridgeport, Conn.
J. A. Leverty, Bridgeport, Conn.
Louis Spencer Levy, New York City.
Miss V. Lewis, West Point, Va.
A. W. Linton, Seattle, Wash.

Miss Dorothy Lloyd, Cincinnati.
Mrs. John Uri Lloyd, Cincinnati.
John Uri Lloyd, Cincinnati.
E. Grace Lotz, Baltimore, Md.
Mrs. Wm. H. Lotz, Baltimore, Md.
Miss Reta Lovis, New York City.
H. C. Lovis, New York City.
Rufus A. Lyman, Lincoln, Neb.
Thos. F. Main, New York City.
W. H. McNeill, Paterson, N. J.
Mrs. W. H. McNeill, Paterson, N. J.
A. Major, New York City.
William Mansfield, New York City.
Miss Margaret Martin, Roselle, N. Y.
Adolph F. Marquier, Newark, N. J.
Harry B. Mason, Detroit.
Mrs. I. Vaughn Mathis, Ventnor.
I. Vaughn Mathis, Ventnor.
Harry Matusow, Philadelphia.
Edwin W. May, Martinsville, Ind.
Mrs. E. W. May, Martinsville, Ind.
Frank L. McCartney, New York City.

Robert F. McDonald, New York City.
J. T. McGill, Nashville, Tenn.
Mrs. F. W. Meissner, La Porte, Ind.
F. W. Meissner, La Porte, Ind.
J. C. Mendenhall, Evansville, Ind.
Mrs. Louis J. Meuser, Dover, N. J.
Louis J. Meuser, Dover, N. J.
Fred R. Meuser, Dover, N. J.
Chas. G. Merrell, Cincinnati.
Chas. L. Meyer, Baltimore, Md.
Adolph W. Miller, Philadelphia.
Leo L. Mrazek, Chicago, Ill.
Hugh C. Mulldoon, Boston, Mass.
J. T. Munds, Montclair.
Mrs. J. T. Munds, Montclair.
B. L. Murray, Rahway, N. J.

Edwin L. Newcomb, Minneapolis, Minn.
Mrs. Clara Newton, Boston, Mass.
Harry J. Novack, Brooklyn, N. Y.

Frank J. O'Rourke, Whitestone, N. Y.
John C. Otis, Cincinnati.

C. H. Packard, Boston, Mass.
Geo. W. Parisen, Perth Amboy, N. J.
Edgar L. Patch, Boston, Mass.
Annie M. Patterson, Baltimore.
John F. Patton, York, Pa.
Josiah C. Peacock, Philadelphia.
Bertha L. DeG. Peacock, Philadelphia.
E. L. Pilck, Covington, Ky.
Paul S. Pittenger, Philadelphia.
Mrs. Paul S. Pittenger, Philadelphia.
Warren H. Poley, Mt. Airy, Pa.
M. L. Porter, Danforth, Me.
H. E. Purdy, Derby, Conn.
Mrs. H. E. Purdy, Derby, Conn.
D. W. Ramsaur, Palatka, Fla.
Otto Raubenheimer, Brooklyn, N. Y.
Mrs. Joseph P. Remington, Longport, N. J.
Joseph P. Remington, Longport, N. J.
W. S. Richardson, Washington, D. C.
Geo. T. Riefflin, New York City.
J. R. Rippetoe, New York City.
Emil Roller, New York City.
Leo Roon, Elmhurst, L. I.
Chas. R. Rosenberg, Jr., Atlantic City.
Miss Ida B. Roth.
Lewis William Rowe, Detroit, Mich.
Mrs. W. F. Rudd, Richmond, Va.
Wortley F. Rudd, Richmond, Va.
Edsel A. Ruddiman, Nashville, Tenn.
Mrs. Edsel A. Ruddiman, Nashville, Tenn.
Mrs. H. H. Rusby, Newark, N. J.
H. H. Rusby, Newark, N. J.

Louis Saalbach, Pittsburgh, Pa.
Mrs. Edward A. Sayre, Orange, N. J.
Edward A. Sayre, Orange, N. J.
L. E. Sayre, Lawrence, Kans.
Hugo H. Schaefer, Brooklyn, N. Y.
Mrs. Frederick Schaefer, Brooklyn, N. Y.
Frederick Schaefer, Brooklyn, N. Y.
Geo. E. Schweinfurth, New York City.
Wilbur L. Scoville, Detroit, Mich.
Miss E. R. Seabury, New York City.
Leonard A. Seltzer, Detroit, Mich.
Mrs. W. E. Sherriff, Ellsworth, Kans.
W. E. Sherriff, Ellsworth, Kans.
Chas. H. Skinner, Windsor, Vt.
Theodore Smith, Baltimore, Md.
Clyde M. Snow, Chicago, Ill.
Mrs. Clyde M. Snow, Chicago, Ill.
Edgar R. Sparks, Burlington, N. J.
Miss Ruth E. Sparks, Burlington, N. J.
Master Paul R. Sparks, Burlington, N. J.
Mrs. E. R. Sparks, Burlington, N. J.
L. L. Staehle, Newark, N. J.
I. V. Stanley Stanislaus, Lock Haven, Pa.
Mrs. Zillah Staples, Boston.
Mabel C. Starr, Philadelphia.
William L. Stearns, Stapleton, N. Y.
Mrs. E. T. N. Stein, Montclair, N. J.
Miss Mary K. Stein, Montclair, N. J.
Edward T. N. Stein, Montclair, N. J.
F. E. Stewart, Philadelphia.
Charles H. Stocking, Norman, Okla.
Mrs. David Stolz, Syracuse, N. Y.

David Stolz, Syracuse, N. Y.
Frank P. Streeper, Chestnut Hill, Pa.
Freeman P. Stroup, Philadelphia.
Louise S. Suhr, West Hoboken, N. J.
Raymond Swarty, Bridgeport, Conn.
Leon A. Taylor, Lakewood, N. J.
Francisco Taquechel, Havana, Cuba.
Wilber J. Teeters, Iowa City, Ia.
G. D. Timmons, Valparaiso, Ind.
Mrs. G. D. Timmons, Valparaiso, Ind.
John B. Thomas, Baltimore, Md.
C. A. M. Todd, Kalamazoo, Mich.
Jos. F. Turner, Brooklyn, N. Y.

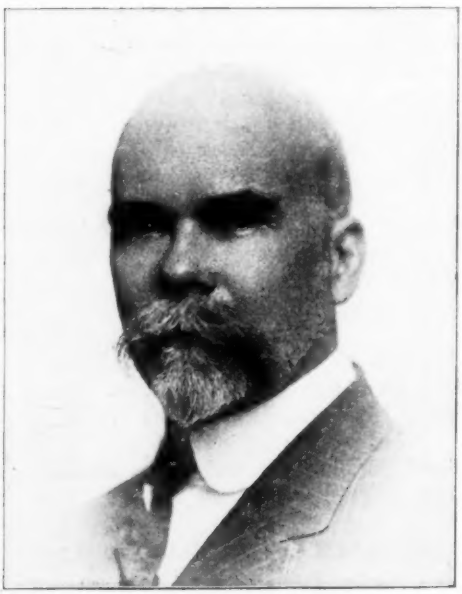
Miriam G. Truby, Pittsburgh.
P. Henry Utech, Meadville, Pa.
Mrs. P. Henry Utech, Meadville, Pa.

Miss Nannis Vaden, Richmond, Va.
Chas. E. Vanderkleed, Philadelphia.
Arno Viehover, Washington, D. C.

John C. Wallace, New Castle, Pa.
Lucius L. Walton, Williamsport, Pa.
Miss Adelaide E. Ward, Cleveland, Ohio.
Joseph Weinstein, New York City.
Joseph B. Welsh, Paducah, Ky.
M. I. Wilbert, Washington, D. C.
Seward W. Williams, Chicago.
Thomas W. Williamson, Frederick.
J. Fred Windolph, Norwich, N. Y.
Mrs. O. J. Winn, Boston, Mass.
H. A. Winn, Boston, Mass.
Mrs. Curt P. Wimmer, New York City.
Curt Paul Wimmer, New York City.
E. H. Wisner, Valparaiso, Ind.
Mrs. H. M. Whelpley, St. Louis, Mo.
H. M. Whelpley, St. Louis, Mo.
H. C. Wood, Jr., Philadelphia.

W. H. Zeigler, Charleston, S. C.
Mrs. W. H. Zeigler, Charleston, S. C.
E. V. Zoeller, Tarboro, N. C.

J. W. ENGLAND
Secretary, Phila. Council, A. Ph. A.



DR. H. M. WHELPLEY
St. Louis, Treasurer, A. Ph. A.

AMERICAN PHARMACEUTICAL ASSOCIATION FINANCES, AUGUST 28, 1916.*

ADDENDA TO THE TREASURER'S REPORT, BY H. M. WHELPLEY, TREASURER.

The annual report of the treasurer for the fiscal year 1916 was printed in the JOURNAL OF THE A. PH. A., vol. v, pp. 640–651. This was prepared in accordance with the by-laws and has been approved by the Auditing Committee. The report covers a period which closed eight months ago. I now submit a report showing the financial status of the Association at the present time and also reviewing some of the activities not recorded in the more formal report.

Following the 1915 meeting, I suggested to the members of the Council that they read the history of the funds as given in the Year-Book and study the Constitution, By-laws, General Rules, Rules of Finance and those of the Council in order to be better prepared to discharge the duties of Council membership. One member resented the intimation that he was not fully acquainted with all of the provisions enumerated. I beg his pardon but still feel justified in urging the entire A. Ph. A. membership to become more familiar with the plan of organization and the executive procedures. This will facilitate coöperation in the Association work.

The Fiscal Year formerly dated from July 1 to June 30 inclusive. The Association changed this custom in 1911 so that beginning with January, 1912, the fiscal year has been concurrent with the calendar year. The new plan has facilitated the work of the treasurer in collecting dues. The fiscal year now corresponds with the volume of the JOURNAL and as far as I have observed is without objection or criticism. The former fiscal year caused constant confusion which required much correspondence with members.

The Professor C. Lewis Diehl Honorarium.—The Council at the 1915 meeting voted Professor C. Lewis Diehl the sum of one thousand dollars ($1000.00) " for his work on the National Formulary, Fourth Edition." The motion (see JOURNAL A. PH. A., vol. iv, p. 1377) provided for the payment to be made in two instalments of five hundred dollars ($500) each. One payment at once and the other " during the year 1916." The first instalment was paid, September 14, 1915 (see J. A. PH. A., vol. v, p. 645). The Council subsequently reconsidered this action and directed that the second instalment be paid " as soon as, in the judgment of the treasurer and the Committee on Finance, the condition of the treasury and the interests of the Association will permit." (See J. A. PH.A., vol. v, p. 93.)

The Committee on Finance approved the payment of the second instalment by voucher check, dated August 19, 1916, so that the condition of the original vote of the Council has been carried out four months earlier than the time limit. This one thousand dollars ($1000.00) has been charged to the N. F. IV expense account.

Disposition of National Formulary Net Income.—The Council at the 1915 meeting adopted the following:

Rule 14. *Disposal of Receipts from National Formulary:* The treasurer shall keep a separate and accurate account of all receipts and disbursements for the National Formulary. Any balance of receipts in excess of disbursements remaining to the credit of this account at the end of any fiscal year shall be credited to the Endowment Fund and become a part thereof (see JOUR. A. PH. A., vol. iv, p. 1376).

* Presented at the Atlantic City meeting, A. Ph. A., 1916.

The treasurer desires to know whether this rule became effective the day it was adopted, August 13, 1915, or is it to go into operation with the N. F. IV account and the first payment to the Endowment Fund, made December 31, 1916. The National Formulary receipt for the period, August 13 to December 3, 1915, exceeded the disbursements by forty-five dollars and ninety-five cents ($45.95). Should this sum be taken out of the current funds and placed in the Endowment Fund? If the National Formulary disbursements for a fiscal year exceed the receipts, should the debit balance be carried over into the next fiscal year? The National Formulary receipts from January 1, 1916, to date, exceed the disbursements by nine hundred dollars and sixty-five cents ($900.65). If Rule Fourteen becomes operative with the N. F. IV, should the disbursements from the beginning of the expense for this revision be taken into account with the disbursements for 1916? The disbursements for the N. F. IV began in 1908 and amount to about thirty-five hundred dollars ($3500.00). Should the treasurer continue to carry the National Formulary receipts with the current funds or should he open a separate bank account with the National Formulary?

The A. Ph. A. Deposits.—Funds have been placed in the Boston Penny Savings Bank since 1903 and to-day that institution has Eighteen thousand and ninety-seven dollars and seventy-nine cents ($18,097.79) to the credit of the A. Ph. A. In 1908, the Council approved the recommendation of the Committee on Finance and in accordance with the same the account of the Current Fund was opened with the International Bank of St. Louis. The Committee on Invested and Trust Funds has approved of placing additional accounts with this bank. To-day, the total amount to the credit of the A. Ph. A. in the International Bank of St. Louis is fourteen thousand three hundred and sixty-five dollars and four cents ($14,365.04).

Under date of December 2, 1915, W. B. Day, Chairman of the Committee on Invested and Trust Funds, wrote the treasurer, as follows:

> I have made inquiry through my bank, regarding the International Bank of St. Louis and the Boston Penny Savings Bank. I have also had Messrs. E. G. Eberle and Charles Holzhauer make inquiry. All responses have been favorable. I have no doubt our funds are thoroughly well protected.
>
> When I first learned that the Boston Penny Savings Bank paid 4 per cent. interest while the first-class savings banks in Chicago paid but 3 per cent., I wondered if it was as good and safe and conservative as our banks here, but I am informed that the savings banks in Massachusetts are very well guarded by the provisions of the banking law and that this bank, particularly, is an old established and strong one. I think we have no cause whatever for any uneasiness in regard to the safety of our funds.

The registered bonds, certificate of deposit, A. Ph. A. certificate of incorporation, Ebert will, and other important papers are deposited in Box No. 4227 of the Title Guaranty Trust Co. safe deposit vault, at Seventh and Chestnut Streets, St. Louis. This action has been approved by the Council but the security of the vaults should be investigated each year.

Of course, the treasurer will continue these deposits until otherwise instructed. I feel that the treasurer should be relieved of all responsibility in this matter. The Council should through the proper committees (Finance and the one on Invested and Trust Funds) keep well informed regarding the depositories for the A. Ph. A. funds and records and annually instruct the treasurer. What are the wishes of the Association for the ensuing year?

Separate Funds and Accounts.—The A. Ph. A. now has nine bank accounts, as follows: Life Membership Fund, Centennial Fund, Ebert Prize Fund, College Prize Fund, Endowment Fund, Procter Monument Fund, Rice Memorial Fund,

Ebert Legacy Fund, Current Cash. One certificate of deposit and twenty-six thousand dollars in registered bonds are also in the care of the treasurer. Separate ledger accounts are kept with the National Formulary, badges and bars and also buttons and pins.

The Ebert Lot.—The written report made to the treasurer on the Albert E. Ebert Legacy, December 11, 1909, did not include a lot at Winnetka, Illinois, but a verbal statement mentioned such a lot. The bills for general and special taxes on this lot came to the treasurer and were paid each year until 1915 when it developed that the lot was sold by the executors, October 14, 1912. Owing to the death of one of the executors and also the legal counsel the sale was not reported to the association. When these facts were established, the surviving executor paid the treasurer five hundred dollars ($500.00), the sale price of the lot, and one hundred and nineteen dollars and eighty-one cents ($119.81), the amount of general and special taxes paid by the Association since the lot was sold. These sums have been added to the Ebert Legacy Fund (J. A. PH. A., vol. v, p. 648).

The Ebert Jewelry.—The executors of the Albert E. Ebert estate turned over to the treasurer jewelry which has been valued by two appraisements, one in Chicago and one in St. Louis, at about four hundred dollars. It is too old to sell as jewelry and not old enough to be valued as antiques. The value mentioned is for the old gold and the precious stones. Should the treasurer continue to hold this jewelry or be authorized to sell it?

The A. Ph. A. Button.—This emblem adopted in 1914 was placed on sale in March of that year. It has become very popular and over four hundred have been sold. The treasurer advertises them in his correspondence.

Photographs and Autobiographies of Members.—The Council at the 1915 meeting (J. A. PH. A., vol. iv, p. 1376) adopted the following:

Resolved, That every member of the Association be requested by the treasurer to furnish the historian of the Association a recent photograph and a brief autobiography.

Since the beginning of the present year, I have mailed with each certificate receipt a request that the dues-paid members comply with the above resolution. The historian will report results to date. I think this plan of solicitation should be continued as long as it brings results.

The Collection of Dues.—Eight years ago, the Association was carrying delinquents who owed from one to five years' dues. To-day no one owes for more than eight months. This change was not brought about without some friction and much personal attention to those who look upon the payment of Association dues as a favor to be granted at some convenient time. The officers and more than a score of lay members annually care for lists of local delinquents who are not amenable to the efforts of the treasurer. The general membership intends to be prompt but many are like the man who said:

Your fifth letter is before me and here is your "V." It is evident that others are often as negligent as I have been. This I regret, for your always courteous manner deserves prompt attention to your bills.

Some fail to comprehend the conditions of membership or the obligation of the treasurer to prosecute each account to a conclusion. I can best illustrate this fact with a few quotations from delinquents who had heard from the treasurer many times.

1. "I joined for only one year. Let me alone."
2. "If I wanted to be a member, I would have paid the first bill. Can't you take a hint?"
3. "You have no claim on me, for I never paid a cent. Some one put up for me. Your letters annoy me."

4. "You must enjoy dunning. Well, I have had enough of it and will not open your next letter."

5. "I am afraid you will use up all of the postage in St. Louis, so I write to tell you I have no desire nor intention of remaining a member."

The Certificate Form of Receipt for Dues.—This document, 8½ × 5½ inches was adopted in 1912 in lieu of the ordinary receipt formerly used. Many members frame and display their annual certificates. Since these certificates are serially numbered, the treasurer can at a glance tell how many members have paid their dues. At this date, I have issued 2075 certificate receipts for 1916 and eighty-nine for 1917. One member has paid for 1918.

Residence Unknown Members.—The treasurer is in constant touch with the pulse of the membership and is hindered in his work by the "residence unknown" members. The office of the Surgeon-General supplies some addresses. The secretaries of the state boards of pharmacy are frequently consulted and render useful information. The itinerant character of our membership is indicated by an average of one percent of the total number being on the "residence unknown" list.

Life Members.—The payment of dues for thirty-seven consecutive years (by-laws, Chap. VIII, Art. IV) places a person on the life membership list. Ten thus became life members in 1916, making a total of one hundred and twenty-eight (128) who receive all of the benefits of contributing members. At the present time when the expenses equal or exceed the income from the Association dues the life members cost about one thousand dollars per year. The interest on the Life Membership Fund, established in 1870, is about seven hundred dollars per year. This is available for current expenses during the year (Const., Art. IV), but none has been so used since the two years 1900 and 1901. The last fee paid into the fund was in 1913. The Life Membership List has nearly doubled the past ten years. Should the by-laws be amended?

Life Members, Old Style.—Under the old constitution, prior to 1887, it was customary to elect a class of life members who did not receive any of the publications of the Association. This has been continued by occasional elections during more recent years. We now have thirteen such names on the list. They are of no expense to the Association. The treasurer writes them annually to make certain that the list is correct.

The A. Ph. A. Membership, August 15, 1916, numbered 2585, which is fifty more than on July 29, 1915. The present membership consists of 2436 active and 149 non-paying members. The non-paying are eighty honorary, thirteen life, old style, and 128 regular life members. During the above period, we have suspended 189, while 161 have resigned and 38 were lost by death. This is a total loss of 388 members since July 29, 1915.

Auditing the A. Ph. A. Accounts.—General Rules of Finance Nos. 7, 8, 9 and 10 relate to the auditing of the accounts of the Treasurer and of the General Secretary. It would facilitate the work if these officers were given to the fifteenth of February instead of the fifteenth of January in which to close the books for the auditors. This will give time for the return of bank checks. The heaviest payment of dues comes in January and increases the work at that time. Chapter V, Article IV, instructs the treasurer to present his report for auditing at the annual meeting of the Council. This obsolete By-law is very old and should be revised to accord with the Rules of Finance and the present order of procedure. I also suggest that, since the editor of the JOURNAL handles much more money than does the General Secretary, his books and accounts be audited. The following reports are submitted in conformity with the Rules of Finance.

REPORT OF THE A. PH. A. AUDITING COMMITTEE FOR 1915.

To the Officers and Members of the American Pharmaceutical Association:

We have examined the books of Henry M. Whelpley and William B. Day, respectively Treasurer and General Secretary of the American Pharmaceutical Association for the fiscal year 1915, and compared the records with the vouchers and found them correct. We have found a proper accounting for all of the funds of the association. The cash balance to January 1, 1916, corresponds with the books of the International Bank of St. Louis and the Massachusetts State and the St. Louis City registered bonds and the International Bank of St. Louis certificate of deposit in the hands of Treasurer Henry M. Whelpley.

Auditing Committee,
OTTO F. CLAUS, *Chairman.*
F. G. UHLICH.

ST. LOUIS, Mo., April 12, 1916.

REPORT FOR 1915 A. PH. A. INVESTED BONDS.

ST. LOUIS, Mo., April 12, 1916.

To the Officers and Members of the American Pharmaceutical Association:

We, the undersigned, have, in accordance with Rule 8 of General Rules of Finance, examined the securities contained in the Association Box (No. 4227) at the Title Guaranty Trust Co., St. Louis, and found the following:

Ebert Legacy Fund Bond.

1 St. Louis City Registered 4 percent Bond (No. 766)	$2000 00

A. Ph. A. General Fund Bonds.

5 St. Louis City Reg. 4 percent Bonds (Nos. 705, 706, 707, 708, 709)	$5000 00
1 St. Louis City Reg. 4 percent Bond (No. 717)	5000 00
Total	$10,000 00

A. Ph. A. Centennial Fund Bonds.

1 Massachusetts Registered 3 percent Bond (No. 1705)	$1000 00

A. Ph. A. Life Membership Fund Bonds.

1 Massachusetts State Registered 3 percent Bond (No. 1701)	$10,000 00
3 Massachusetts State Reg. 3 percent Bonds (Nos. 1702, 1703, 1704)	3000 00
Total	$13,000 00

A. Ph. A. Procter Monument Fund.

Certificate of Deposit No. 63,008, dated December 31, 1915, International Bank of St. Louis (Due June 30, 1916) (Principal)	$5004 96

H. M. WHELPLEY, *Treasurer.*
OTTO F. CLAUS, *Member, Auditing Committee.*

Subscribed and sworn to before me this 22nd day of August, 1916.

(SEAL) JOHN R. BIRCHER,
Notary Public, City of St. Louis.

My term expires January 19th, 1920.

The Year-Book.—The membership does not fully understand that the Year-Book cannot be published during the current fiscal year, as it represents the entire twelve months and cannot be closed during the year of the date it represents. Some wonder why the Year-Book for 1916 has not been published. This is easily explained but it is difficult for the treasurer to satisfy the delinquent who

has received a half dozen requests for his 1916 dues but no Year-Book for 1914 or 1915. Some members have said that they complain because we do not give what we promise. One man wrote, "I never look at the Year-Book, but I want all that is coming to me before I pay my dues to the polite but persistent treasurer." The Year-Book, including the salary of the Reporter on Progress of Pharmacy, costs more than one-third of the income from annual dues. The printing of both the 1914 and the 1915 volumes this year will bring the series up to date and add about three thousand dollars ($3000.00) to the expense account, which sum should have been an item in the budget of a previous year, when no year-book was printed. The income from the sale of year-books and proceedings thus far this year amounts to thirty-six dollars and forty-five cents ($36.45). It should be remembered that the Reporter on Progress of Pharmacy has, on a salary reduced from twelve to six hundred dollars, prepared two instead of one year-book since his election at the 1915 meeting.

The A. Ph. A. Journal.—The Bulletin of the A. Ph. A., established in January, 1906, and published without advertisements, became the JOURNAL OF THE A. PH. A. in January, 1912. It was placed on a subscription and advertising basis. It was understood at the time of the change from a bulletin to a journal that the enlarged periodical would combine the PROCEEDINGS and the BULLETIN. Also, that the income from advertising would at least cover the expense of publishing and editing the JOURNAL. Editor E. G. Eberle has materially increased the volume of advertising for 1916 but the net expense of the JOURNAL for this year will be about one-third of the Association income from annual dues. The JOURNAL as well as the Year-Book is of material aid to the treasurer in collecting dues. The extent to which it is valued by the members is indicated by the fact that we have only thirteen who do not subscribe for the periodical. Most of these "dues only" members have access to the JOURNAL coming to a relative or partner who pays the full fee of five dollars per year.

The A. Ph. A. Income.—Since the establishment of the JOURNAL, the Association has had three main sources of income. First, the annual dues; second, advertisements in the JOURNAL; third, the net profit on the National Formulary. Since it has been decided to add the National Formulary earnings to the Endowment Fund, that steady income is no longer available for general expenses. The volume of advertising business is increasing without materially adding to the JOURNAL expenses. With an increased membership, the value of advertising space will be greater and the JOURNAL may eventually become almost self-supporting. Increased membership adds some to the overhead expenses of the Association but in a much greater proportion to the net income. A greater membership will thus directly and individually increase the two main sources of revenue, which now are dues and advertising.

The A. Ph. A. Account for 1916.—The receipts thus far for 1916 exceed the disbursements by $4138.18. Of this amount, $1000.00 is in payment for the use of N. F. IV text and is not available for Association expenses. We may receive $1000.00 more from annual dues. The amount depends largely on the number of new members. The income from advertising will about meet the expense of printing and mailing the JOURNAL. The expense for the rest of the year, if only one Year-Book is published, will include $3000.00 for Year-Book No. 3, $2500.00 for salaries and perhaps $1500.00 for other expenses. With $4000.00 to meet this total of $7000.00, we are likely to be about $3000.00 short by the end of the year. This does not take into consideration the $10,000.00 of current fund now in St. Louis bonds nor the $700.00 interest on the Life Membership Fund, both

of which are available for current expenses, but the treasurer cannot use them without authority from the Council. A deficiency at the close of 1915 was avoided by carrying over some of the bills until the dues for 1916 became available. The rough estimate I have made does not contemplate using any of the income from the N. F. IV.

The A. Ph. A. Assets.—The funds grow steadily and the association has a better cash balance than was reported on January 1.

Permanent Funds.

Life Membership Fund	$21,611 46
Centennial Fund	2908 10
Ebert Prize Fund	1105 94
Endowment Fund	6434 61
Ebert Legacy Fund	4086 65
Total Permanent Funds	$36,146 76
Cash on hand	4225 43
Bonds which belong to Current Fund	10,000 00
Total Current Funds	$14,225 43

Funds Held in Trust.

College Prize Fund	$37 68
Procter Monument Fund	7878 15
Rice Memorial Fund	174 81
Total Funds Held in Trust	$8090 64
Current Fund	14,225 43
Permanent Funds	36,146 76
A. Ph. A. Assets	$50,372 19
Funds Held in Trust	8090 64
Total	$58 462 83

Since my annual report (JOURNAL A. PH. A., vol. v, page 649) the Current Fund has increased by $4,138.18. The Permanent Funds are $742.52 larger so the A. Ph. A. is $4,880.70 richer in assets than on January 1, 1916.

For convenience in studying the financial situation, I submit a summary of the receipts and disbursements from the first of the year to the date of August 28, 1916.

A. Ph. A. Receipts from January 1 to August 28, 1916.

Cash on hand January 1, 1916		$87.25
Annual dues and Journal, 1914	$15 00	
Annual dues and Journal, 1915	380 00	
Annual dues and Journal, 1916	8265 00	
Annual dues and Journal, 1917	455 00	
Annual dues and Journal, 1918	5 00	
Annual dues and Journal, 1916 (January 1, 1916, to July 1, 1916)	7 50	
Annual dues and Journal, 1916 (January 1, 1916, to April 1, 1916)	1 25	$9128 75
Dues only of the A. Ph. A., 1916		52 00
4 Paper Certificates of Membership at $3.00		12 00
National Formulary III		582 24
National Formulary IV		1000 00

Proceedings and Year Book		$36 45	
Journal Advertising		3451 27	
Journal Subscription		151 45	
Interest on St. Louis Bonds in Current Funds	$400 00		
Interest on deposits in International Bank of St. Louis	50 15	450 15	
Bank Exchange paid by Members		74	
Reprint, Journal		8 00	
Sale of 9 Gold Membership Buttons @ $1.00	9 00		
Sale of 19 Plated Membership Buttons @ 25 cents	4 75		
Sale of 7 Gold Membership Pins @ $1.00	7 00		
Sale of 5 Plated Membership Pins @ 25 cents	1 25	22 00	$14,895 05

Cash Received and Placed in the Funds.

Centennial Funds (Int. on Massachusetts State Bonds)	$30 00		
Life Membership Fund (Int. on Mass. State Bonds)	390 00		
Ebert Legacy Fund (Int. on St. Louis Bonds)	40 00	460 00	

St. Louis International Bank Interest on Funds from January 1, 1916 to August 25, 1916.

Ebert Legacy Fund	$34 60		
Procter Monument Fund	46 65		
Rice Memorial Fund	1 55	82 80	542 80
Receipts from Jan. 1 to Aug. 27, 1916		$15,437 85	
Total			$15,525 10

Summary of A. Ph. A. Disbursements January 1 to August 28, 1916.

Salaries	$4733 36	
Journal	3828 65	
Printing, Postage and Stationery	618 11	
Clerical Expenses	272 00	
National Formulary III	131 84	
National Formulary IV	533 70	
Drayage Freight and Express	2 46	
Miscellaneous Expenses	245 17	
Badges and Bars	14	
Journal for Reporters on Progress of Pharmacy	19 96	
Committee on Membership	188 54	
National Drug Trade Conference	99 18	
Section on Scientific Papers	7 00	
Committee on Unofficial Standards	30 92	
Recipe Book	10 50	
Section on Education and Legislation	11 75	
Year Book	6 74	
Women's Section	16 85	$10,756 87

Cash Received and Placed in the Funds.

Centennial Fund	$30 00	
Life Membership Fund	390 00	
Ebert Legacy Fund	74 60	
Procter Monument Fund	46 65	
Rice Memorial Fund	1 55	542 80
Total Disbursements to August 28, 1916	$11,299 67	$11,299 67

SEVENTEENTH ANNUAL MEETING OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

The seventeenth annual meeting of the American Conference of Pharmaceutical Faculties convened in Philadelphia September 1, in the Philadelphia Bourse. Howard B. French, president of the Philadelphia Chamber of Commerce, spoke the words of welcome, and the response was made by President H. V. Arny, of the Conference. The succeeding meetings of the Conference were held in the Rittenhouse Hotel.

ADDRESS OF PRESIDENT H. V. ARNY.

INTRODUCTION.

The admirable address of my distinguished predecessor in the chair of the American Conference of Pharmaceutical Faculties so fully covered the field of thought coming within the sphere of the activity of the Conference, that apparently he left but scanty gleaning for his successor. And even here our good friend, Dean Wulling, had a thought as to the gleaning, since the recommendations made in his address resulted in the creation of a number of committees designed to carry out the policies so strikingly enumerated by him. In fact, the present chairman said to a friend upon his election to the presidency of the Conference that his position would be largely of the nature of a sinecure, since Dean Wulling's address not only covered the problems of the Conference up to the time of the San Francisco meeting, but had also provided material for discussion for several years to come.

However, events occurring during the past twelve or thirteen months have brought new problems, and these we must face and discuss at this, the 1916 meeting of the Conference. The matters brought up by my predecessor will be well handled in the reports of the several committees appointed for the purpose, so your chairman will deal largely with the events of the past year. Of these, the most important are:

(1) The passage by the Ohio legislature of a "prerequisite" law, effective July 1, 1917, demanding as preliminary education the successful completion of two years of high school work.

(2) The passage, at the San Francisco meeting of the National Association of Boards of Pharmacy, of a resolution expressing the opinion that, after 1920, candidates for registration as pharmacists should be graduates of a high school and of a recognized college of pharmacy.

(3) The filing by the representatives of the Pharmacy Council of the State of New York, at the close of the last session of the Conference, of a protest against the resolution that, beginning in 1917, pharmacy colleges should require 30 counts for entrance. Since that time, the New York law has been so amended that the 30-count requirement will be effective after January 1, 1918.

(4) The inauguration in a technical high school in the central west of a course in pharmacy as the third and fourth year of the high school course.

(5) The issuance of the ninth edition of the United States Pharmacopœia and of the fourth edition of the National Formulary.

(6) The establishment in this country of a Fairchild Pharmaceutical Scholarship.

Widely remote though the six topics mentioned above may seem, there is a connection between them that is so direct that they may be discussed together. In most of their phases, the topics apply more forcibly to the internal affairs of

the Conference, but from several points of view they have a distinct bearing upon the relations of the Conference with the Association of Boards and with our parent organization, the American Pharmaceutical Association. Let us first consider what Dean Wulling aptly termed:

THE CONFERENCE AND ITS INNER RELATIONS.

HIGH SCHOOL COURSES IN PHARMACY.

Of the six topics mentioned above, none is of more vital importance than is the establishment, in a technical high school in Detroit, of a 1300-hour course in pharmacy. This action—the inauguration of pharmacy courses in high schools—is, in my opinion, a matter of as great moment to the Conference, and to Pharmacy as a whole, as the institution of courses of pharmacy in state universities almost a half century ago has already proven itself to be. The facing of the situation at this time in a predetermined spirit of antagonism will, in my opinion, prove as futile as was the opposition shown the representatives of the university schools of pharmacy when they first appeared as delegates at meetings of The American Pharmaceutical Association. Turning to pages 29 and 47 of the *Proceedings* of that Association for 1871, it is interesting to note that the first delegates accredited to the Association were rejected by unanimous vote after the presentation of a report of a committee consisting of sixteen of the most prominent members of the Association, which declared:

> The University is not, within the proper meaning of our Constitution and By-laws, a College of Pharmacy; it being neither an organization controlled by pharmacists, nor an institution of learning which, by its rules and requirements, insures to its graduates the proper practical training to place them on a par with the graduates of the several colleges of pharmacy represented in this Association.

Still more interesting is it to note that the leader of the rejected delegation was, about one-quarter of a century later, honored with the presidency of the association which had declined to receive him in 1871.

The introduction of university pharmaceutical training did not injure the pharmaceutical body as much as the above report considered it would, and we meet to-day, happy in the thought that our Conference offers the opportunity for the representatives of university schools and the independent colleges to meet in harmonious discussion. We may differ as to exact methods of procedure, but we are one in our aim to benefit Pharmacy of to-day and to improve Pharmacy of to-morrow by our work in the class-room, in the laboratory and in the busy world. But how about the new "intruder," the technical high school, as a competitor in the field of pharmaceutical instruction?

In the past, some representatives of the independent schools of pharmacy have characterized the university school of pharmacy as a more or less unfair competitor, inasmuch as the latter institution has support from the state and is, therefore, able to meet financial conditions that are not attainable by those institutions supported by instruction fees. If the pressure is felt when there is scarcely more than one competitor of the character in each state, how much more serious will be the competition if technical high schools, now found in practically every large city, enter the field of pharmaceutical education?

This is not the time to discuss the encroachment of the modern high school upon the field of college endeavor, but I cannot resist the temptation to suggest as a simile the fact that, even as the new boy in the drug store prefers prescription work to his regular duties, so the average high school teacher seems obsessed with the idea of giving his pupils a spurious college course rather than a genuine high

school training. How far these activities are going to be permitted, especially along technical lines, the future alone can tell. But what we, as pharmacy teachers, are interested in is the fact that every technical high school, with its fine plant, its modern equipment and its staff of teachers paid by the tax-payers of the community, is a potential competitor of the already existing colleges of pharmacy.

What shall be done in the matter? Shall we use our influence to curb this new aggression, or shall we extend to the pharmacy high schools the right hand of fellowship?

The direct answer to this question is one that should be given by the Conference, not by an individual delegate.

The following thought, however, is thrown out by way of suggestion. The entrance of high schools into the field of pharmaceutical education makes our problem a triangular one in which the three corners are the independent college, the university college, and the high school. Looking around for a standard of comparison, we might compare the pharmaceutical educational situation with the present-day status of so-called business education. In that field, we have (*a*) the independent commercial colleges, many of which are serving a distinct need at profit to the promoters; (*b*) the commercial high schools, which, by the way, do not appear to have made as great inroads into the field of private teaching as was originally predicted; (*c*) the schools of business of the universities, which are designed to train business *thinkers,* rather than stenographers, typists and bookkeepers. In business, there seems a need for the three classes of educational institutions enumerated above. In pharmacy, it has already been demonstrated that the university course and the independent college course can exist side by side; and the future will show us whether the high school course will prove its fitness to survive. Now the question before us is whether there is not room in our Conference for the three classes of institutions just enumerated.

At the San Francisco meeting, the Conference created a new committee (denominated on page 214 of the *Proceedings* of 1915 as Committee No. 3) which was directed to study the advisability of establishing two classes of membership. While the "two classes of membership" referred to meant our present members and those outside the Conference who have not yet come up to our minimum requirements; while the report presented at this meeting will undoubtedly deal with that problem only; the question occurs to me whether Committee No. 3 should not be continued and requested to study the problem of three classes of our own membership, chiefly to bring about a discussion of this topic:

I RECOMMEND that Committee No. 3 be continued and be requested to study (*a*) the status of those high school courses which comply with all of the requirements of our Conference; (*b*) the advisability of eventually creating within the Conference three sections, one participated in by university schools, one by such high schools as may hereafter be admitted into the Conference, and one consisting of the independent colleges; the three sections to hold general sessions for discussion of matters of general interest and for the transaction of the routine business of the Conference; each section to hold special sessions for the discussion of topics peculiar to the institution composing the section.

In studying the problem of courses in pharmacy given by technical high schools, we should apply to these institutions three tests: (*a*) Will they fill a particular need? (*b*) Will they conduct efficient courses? (*c*) Will they demand sufficiently high requirements?

As to the need, I think that all of us present agree that what Pharmacy needs is not more schools, but better ones. There will be no debate on the subject of

"a long-felt-want," provided we of this Conference do not create a need by pulling ourselves over the heads of our clients.

As to the efficiency of courses offered, that also is within our hands. Admirably equipped though our modern technical high schools are, they cannot compete in that respect with many of the schools represented in our organization. Again, there are many interested in pharmacy who are old-fashioned enough to believe that pharmacy schools should be run by pharmacists and not by high school teachers, and to those the present type of independent colleges of pharmacy will ever appeal.

As to requirements, let us honestly face the fact that the one high school course so far offered has a technical advantage that is worthy of the most careful consideration of this Conference. This 1300-hour course represents the third and fourth years of the regular high school courses, whereas the present minimum requirement of this Conference is a two-year course of 1200 hours of work based on preliminary education of one year of high school "or its equivalent."

Are those of us who are following this minimum requirement merely running a second and third year of a high school course? Or are we conducting trade schools like business colleges, or printing schools or electrical schools? In either event, are we in a position to criticize the courses offered by the technical high schools?

THE CONFERENCE'S 1917 RESOLUTION.

On top of this comes the resolution submitted by the New York Pharmacy Council during the closing hours of the last meeting of the Conference, expressing disapproval of our action taken in Detroit concerning an entrance requirement of two years of high school work by September, 1917. In the opinion of your chairman, the rescinding of the two-year entrance requirement for 1917, passed by the Conference at its Detroit meeting of 1915, would be an open avowal of the fact that the Conference stands for courses inferior to those now proposed by technical high schools, and to thus meet what may eventually turn out to be real competition would be the height of folly. It will also be recalled that, at its session of 1915, the Ohio Legislature passed a prerequisite law which anticipates the Detroit resolution by one year. That is, the two-year preliminary high school education, as well as the diploma of a college of pharmacy, will be demanded of all candidates for registration who apply after July 1, 1917. In other words, all colleges wishing their graduates to register in Ohio after July 1, 1917, will have to demand two years of high school experience from those matriculating this fall. Lastly, on the twenty-sixth of last April, Governor Whitman signed a bill passed by the New York Legislature which so amends the pharmacy law of that State that, after January 1, 1918, matriculants at pharmacy schools recognized by the board of regents must show a preliminary education representing 30 academic counts. This confusion seems still another reason why we should stand to our original resolution, and, in order to bring the proposition squarely before the Conference,

I RECOMMEND that the Detroit resolution of 1915, relative to an entrance requirement of two years of high school work in September, 1917, be reaffirmed.

THE N. A. B. P. 1920 RESOLUTION.

Germane to the subject just discussed is the resolution, passed at the San Francisco meeting of the National Association of Boards of Pharmacy, expressing as the aim of that organization prerequisite legislation in all states by 1920

based on four years of high school training and graduation from a reputable college of pharmacy.

This is the goal toward which the eyes of all of us interested in the future of Pharmacy have been turned for many years past and of its ultimate accomplishment there is no doubt. Particularly happy should we be that it is the men who enforce pharmaceutical legislation who have taken this advance step. We of the Conference have talked much about such a move, but legislative action is difficult of accomplishment unless the board of pharmacy in each state is with us and unless the registered pharmacists of each state are behind the board.

As said above, the ultimate securing of prerequisite legislation, based upon college graduation preceded by four years high school training, is merely a question of time, coupled with patient and persistent work. Whether our brethren of the association of boards are over-sanguine in declaring 1920 the time for bringing about the reform, we have yet to see.

The reformer must, of course, be years ahead of the mass of the people, but if the reform itself is too far ahead of the people, it will defeat its own purpose. In the present instance, are the registered pharmacists of to-day yearning for a four-year high school, two-year college of pharmacy law?

On this point, there is a vast difference of opinion. We have heard at previous meetings of this Conference that the drug trade is ready for the change; we have read that the N. A. B. P. resolution of last year was passed only after a most vigorous discussion. There is but one way to arrive at the point where we can view the situation in its true light and that in a way appropriate to the democratic spirit of our land. Therefore,

I RECOMMEND the appointment of a joint committee from this Conference and from the Association of Boards, which shall endeavor to secure the co-operation of the legislative committee of each state pharmaceutical association in arranging for a referendum postal card vote on the subject, participated in by all of the registered pharmacists of the state in question.

THE NEW UNITED STATES PHARMACOPŒIA.

The ninth edition of the Pharmacopœia of the United States has been in our hands only long enough to furnish us profound food for thought. I think it is agreed by all teachers of pharmacy that their main duty is to train their pupils to understand and to make intelligent use of our national standard. If this aim is to be maintained, as far as the new Pharmacopœia is concerned, we must certainly insist on a four-year course of instruction. Taking merely the chemical side of the work, how can a man intelligently conduct the volumetric, gravimetric, electrolytic and polariscopic tests prescribed for official substances, unless he has had thorough training both in laboratory and in classroom in the principles of physics and of chemistry underlying the particular operation?

As an individual teacher, I feel that the best we can do in a two-year course is to train the student to have a general acquaintance with the Pharmacopœia, but if we wish our students to have a genuine mastery of our standard, at least four years of study is essential; in short, while two years may suffice for the *kennen*, at least four years are demanded for the *wissen*. And this difference pervades the whole of American pharmacy. The average registered pharmacist is becoming a mere vendor, chiefly because he is a *peruser* of the Pharmacopœia rather than a *user* of it. We of the colleges turn out many graduates in pharmacy of

whom it may truthfully be said that they have the "know about" of the Pharmacopœia, but only few who have a real knowledge of our national standard.

To resume the simile used above, a business man wishing a stenographer who can do a little bookkeeping does not call up the school of commerce of the local university for such help; neither does the president of a huge corporation requiring a departmental head turn to the business college for a man to fill the bill. If we delegates to this Conference realized this difference in aims: if we more fully recognized the distinct need for two types of training in pharmacy; if we considered these two types as separate and distinct propositions; if we did not try to masquerade the lesser training in the garb of the higher; if we could consider the higher training without unduly encumbering the lesser training; we would solve our problems with a smaller amount of friction than has been shown at times in our past history.

OUR COMMITTEES.

So fully did my predecessor cover the routine needs of this Conference that the only matter connected with the administration of our affairs that occurs to me relates to sixteen committees that it became my duty to appoint.

Up to this year, the affairs of this Conference have been conducted by the Executive Committee and by occasional special committees. Thus, last year the only special committees in operation were one on teaching methods; one on teachers' salaries; one working in conjunction with a similar group from the Association of Boards on examination questions; and, last but not least, even though it was omitted from the list of committees printed in our last *Proceedings*, one delegated to arrange the program for the joint meeting of our Conference and the Association of Boards. The highest compliment that could have been paid Dean Wulling was the action of the Conference in creating ten new committees to deal with topics discussed in his presidential address. By way of passing, it might be mentioned that this compliment brought upon the incoming president the embarrassing task of selecting fifty-one committee members from among the forty to fifty delegates who have attended a sufficient number of our meetings to have become familiar with the work of the Conference. The result was the drafting of several of our members upon more than one committee. To the credit of our personnel, but two declinations were received and in each case the reason was so sound that the declination had to be accepted. Dean Johnson, because of uncertain health, had to ask to be relieved of the chairmanship of Committee No. 9, and requested Dr. Diekman, the second ranking member, to serve in his stead. Dean Wulling, for equally good reasons, declined to serve as chairman of the joint committee on the definition of a proprietary medicine created at the session of the A. Ph. A. Section of Education, of the Conference and the Association of Boards, and your chairman decided to appoint in his stead our friend, Dr. J. H. Beal, former president of the Conference, even though he is not at the present time actively engaged in teaching.

Dr. Beal kindly consented to serve, was made chairman by the joint committee (which consisted of three members from the Conference and three members from the National Association of Boards of Pharmacy), and has submitted an admirable report which will be heard by us later.

This incident brings us to a consideration of a modification of the national question: "What will we do with our ex-presidents?" In our case the problem is the utilization of the talents of those no longer active in the Conference because

they are no longer actively engaged in teaching. The complication comes from the fact that not one of us present to-day is a member of the Conference. We are here because the colleges we represent are members of the Conference and so soon as any one of us is no longer delegated to represent a member of the Conference, that one of us has officially no standing in our organization. In many cases, notably in the case just cited, the Conference may lose the services of one of its most valued workers and if the idea of committee administration is to continue it is imperative that the status of former delegates be defined. A similar problem in the National Association of Boards of Pharmacy was met by the creation of a list of associate members.

Reading our constitution, I find that the only mention made of individuals interested in the Conference is in Article 3, " Pharmaceutical Faculties represented by delegates "; in Article 5, " properly accredited delegates of any faculty shall have the right to engage in debate"; and in Article 7, where it says that " the Executive Committee shall consist of the President and the Secretary-Treasurer as ex-officio members and five *legally accredited delegates* elected by ballot." In order to open discussion of this matter,

I RECOMMEND that a new article be inserted in the Constitution discussing the personnel of committees and directing that the President select as committee members only those persons who have been legally accredited delegates to the Conference at least twice during the five years preceding the appointment.

A study of our sixteen appointed committees shows that some may be able to report at this session and then ask for a discharge; that others might well be consolidated (example, the program committee and the committee on teaching methods), while others are important enough to be made into standing committees. Even those of us who have given the matter some thought cannot decide offhand how each of our several committees should be handled and therefore,

I RECOMMEND that the next President be directed to appoint a special committee or committees which shall study the nature of the sixteen special committees now extant, and which, after such study and after consultation with the chairmen of these committees, shall decide which of these shall be made standing committees.

I FURTHER RECOMMEND that the new section of the Constitution, suggested above, shall give the list of standing committees, as decided upon by the committee on committees.

I FURTHER RECOMMEND that in future issues of the Proceedings of this Conference the list of committees be placed in the front of the book immediately following the page devoted to the list of officers.

THE CONFERENCE AND ITS OUTWARD RELATIONS.

In discussion of the Conference and its inner relations, several topics have been handled that could well be considered as problems connected with the outward relations of the Conference.

The extremely high quality of the new edition of the United States Pharmacopœia might be considered, as well by the Association of Boards in connection with the discussion of examination questions as in the cloistered seclusion of the Conference, while the recommendations made concerning the 1920 prerequisite resolution passed by the Association of Boards at their San Francisco meeting will, if approved by the Conference, have to go before the Association of Boards for ratification. Of the six events of the past year recorded in the introduction to this address, but one has been reserved for this section referring to the outer relations of the Conference: The generous donation made by Mr. Samuel W. Fairchild for the establishment of a pharmaceutical scholarship.

THE FAIRCHILD SCHOLARSHIP.

It will be recalled that in his address delivered last year in San Francisco President C. A. Mayo, of the American Pharmaceutical Association, announced the founding, by Mr. S. W. Fairchild, of a pharmaceutical scholarship, similar to the one founded by him in England several years ago. This scholarship, by the terms of the gift, is to be administered by a commission consisting of the president of the American Pharmaceutical Association, the president of the National Association of Boards of Pharmacy, the president of the American Conference of Pharmaceutical Faculties and the Editor of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION. It will therefore be seen that three organizations—one of them the Conference, another the Association of Boards—are interested in this scholarship, and especially at the present time of laying the foundations for future administration of the gift should we give the matter our serious thought. The report of the commission will be presented for our consideration by its chairman, Dr. W. C. Alpers, during this session, prior to final action being taken on it at the joint session of the Section of Education and Legislation of the American Pharmaceutical Association with the Association of Boards and the Conference of Faculties, scheduled to be held on September 6; hence details should be deferred until we hear from Dr. Alpers. What we might profitably discuss at our present session is how the gift can be best administered, not merely to the advantage of the beneficiary of a certain year, but for the betterment of pharmaceutical education, the latter phrase being used to imply either the work of the college or of the board. In England, the candidates compete on the basis of general qualifications as shown by credentials backed up by a competitive examination. It is the opinion of the writer that, if the competitive examination idea obtains as far as the American Fairchild Scholarship is concerned, it should be under the auspices of the joint examination committee of the Association of Boards and of the Conference; that it should foreshadow the coming union examination toward which we are all striving, and that each organization should see that its president, as a member of the commission, does his best to bring such action about.

OUR JOINT COMMITTEE ON EXAMINATION QUESTIONS.

Of the many services rendered to American Pharmacy by the Conference and by the Association of Boards, none is more valuable than the labors of the joint committee on examination questions created by the two organizations. The future of pharmacy rests largely upon the quality of those now entering the ranks of registered pharmacists, and if we keep proper watch at the gate we will have less trouble among those within the fold. That the present haphazard methods of examination of candidates must give way to more orderly procedure, the Association of Boards has already decided; that the teachers are willing to cooperate to the utmost extent is shown by the action of the Conference in participating in the joint committee on questions.

It was a matter of great regret to me that I was unable to attend the meeting of this joint committee that was held in Chicago on the ninth of March, but the Conference was ably represented by Messrs. Beal, Clarke, Day, Dye, Jordan, Koch, Long and Snow. As the joint committee will report on its work very shortly, there is no need for its findings to be anticipated in this address.

UNION EXAMINATIONS AND RECIPROCITY.

But while we are on the subject it might be well to point out that callings other than ours are interested in the subject of uniform examinations, and that at least one allied branch is attempting to solve the subject in a manner which may be utilized by the National Association of Boards of Pharmacy. The American Medical Association has interested itself in the subject of medical licensure examinations and through its efforts with the co-operation of the United States Government, acting through the medical officers of the Army, the Navy and the Marine Hospital Service, a National Board of Medical Examiners has been established. Those obtaining the certificate of this National Board will, as yet, have no legal rights, but it is assumed that one by one the several states will permit their medical licensing boards to accept the certificates of the National Board in lieu of an examination, and thus a properly trained and qualified practitioner will be permitted to become a licentiate in several states without repeating examinations.

From what we hear, the reciprocity idea, developed by the National Association of Boards of Pharmacy, is meeting each year with more and more success. Pharmaceutical reciprocity does not, however, by any means obtain throughout the breadth of this country, and perhaps the last hindrances to truly national reciprocity may be overcome by the application of the principle of the National Board of Medical Examiners by a similar national board of pharmaceutical character.

A novel proposition which might ultimately be utilized in the development of the union examination idea is the suggestion of M. I. Wilbert, concerning federal pharmaceutical licenses for the handling of narcotics and of alcoholic preparations. The several phases of Dr. Wilbert's proposition are: (*a*) The establishment of one federal license permitting pharmacists to sell narcotics and alcoholics, thus relieving the druggist of the odium of being considered by the Internal Revenue Bureau as a retail liquor dealer; (*b*) the granting of the new certificate, not indiscriminately but only to those pharmacists who are equipped to practise Pharmacy and possess high acquirements in the way of educational credentials and in actual knowledge shown by examinations. In short, the licensed pharmaceutical handler of narcotics and alcoholics will be placed upon a civil service basis; (*c*) such federally licensed pharmacists would be the products of a federal examination conducted by a federal board under the auspices of the Civil Service Commission and as such could eventually obtain registration as pharmacists within the several states, by virtue of having passed the federal examination.

This plan, while highly suggestive, presents several difficulties. In the first place, from what we hear, it will require much work to secure the legislation permitting a joint license for the sale of alcohol and narcotics, since the Internal Revenue officers want to hold all they now have. From the pharmaceutical standpoint, while those wishing narcotic-alcoholic licensure may be willing to submit to a federal examination which, at the present time, would mean a second examination, the plan savors too much of compulsion to make it popular as a road to union examinations. These, if conducted at all, must be at the option of those who, feeling the advantages of a broader exchange of certificates as registered pharmacists are worth some extra work, voluntarily submit themselves to a special examination.

OUR OTHER JOINT COMMITTEES.

The committee on examinations is not the only group of workers which we have in common with the Association of Boards. First of all, we must mention

the joint committee to which we are indebted for the well-planned program of the joint session of the Conference and of the Association of Boards. Then it will be recalled that at the joint session of the Section of Education and Legislation of the A. Ph. A. with the Conference and the Association of Boards held at San Francisco on August 11, 1915, the question of the proper definition of a proprietary medicine was discussed and that it was voted to refer the matter to a joint committee of the Conference and of the Association of Boards. This committee has performed its duty and its report is ready for submission to us at this meeting.

At the joint meeting of the Conference and the Association of Boards held last year, the creation of a joint committee on prerequisite arguments was authorized and we await with pleasure the report that will be brought in. Lastly, the Conference ordered the appointment of a committee to consider with the N. A. B. P., the A. Ph. A. and the N. A. R. D. the desirability of higher educational standards. While this committee has four organizations with which to coöperate, it is highly desirable that we should discuss the topic first with the Association of Boards and then at the joint educational session which will be held next week at Atlantic City.

THE FEDERATION OF PHARMACEUTICAL ORGANIZATIONS.

The subject of a federation of all American pharmaceutical bodies was discussed at some length last year in the address of the president of the Conference, who suggested the appointment of a committee clothed with the authority to initiate the federation movement. This suggestion was approved by the Conference and in appointing this committee, I chose as its leader the man who, during the past few years, has been battling to bring about this highly desirable condition of affairs. Dr. Hynson's report will inspire all of us, I am sure, so I need merely point out that with two such fine nuclei to work with—the joint sessions of the Section on Education and Legislation of the A. Ph. A., of the Conference and of the Association of Boards, on one hand, and the Drug Trade Conference on the other—it should by no means prove an impossible task to crystallize the different groups of drug organization into one splendid unit. But let us remember that ideal crystallization is one of the most uncertain of all physical phenomena.

CONCLUSION.

The last part of this address is delivered at a joint session of the Conference and the Association of Boards. There is no greater privilege that has ever come to me than this opportunity of taking an active part in the deliberations of two such important bodies. As I stand here I look back over twenty-seven years at my first impressions of a faculty—that of my Alma Mater; and of a board—the one but newly organized in my home state. The impression of awe that those two bodies then gave me has given place to familiarity and with the familiarity has come the feeling of affection for the men both of the Boards and of the Faculties who are doing so much to bring Pharmacy into her rightful place.

Last year it was fittingly said that the more we of the Faculties and of the Boards got together, the better we liked each other. We are now bound together in the bond of mutual interest; we have great work that we can perform well only with the help of the other; we are ready to march forward, shoulder to shoulder, enlisted in a common cause—the betterment of Pharmacy.

REPORT OF THE COMMITTEE ON PREREQUISITE ARGUMENTS.*

WILLIAM B. DAY, CHAIRMAN.

INTRODUCTORY.

The dictionary informs us that "prerequisite" means "something previously required or necessary for an end proposed." In pharmacy the term represents a more or less definite preliminary and professional training required of the candidate for the pharmacist's license. In this sense, the meaning of prerequisite is two-fold; it includes not only the professional training in a college of pharmacy, but also the high school preparation which necessarily precedes it.

HISTORY AND PRESENT STATUS.

While the subject of requiring college graduation has been under discussion for many years, it has been only during the last decade that sentiment crystallized to such an extent as to bring about the enactment of prerequisite laws. The first law of the kind went into effect in New York in 1905 and its operation was watched with the greatest interest by the pharmaceutical profession of the country. Pennsylvania followed soon after; then Rhode Island fell into line and, more recently, North Dakota and Ohio have joined the ranks of prerequisite states, while North Carolina, as a compromise, secured a law requiring one year of professional training.

Disappointed in not passing laws framed along these lines, the pharmacists of New Jersey and the State of Washington have obtained the same results through the rulings of their respective state boards of pharmacy, which have, in effect, established the prerequisite in these states. Indeed, as Dr. Wulling pointed out in his presidential address last year, it seems likely that every board of pharmacy has the inherent power of making such regulations as shall insure the proper training of the candidates for license and thus of putting the prerequisite into immediate effect.

In the territory of Porto Rico and the Republic of Cuba the prerequisite is also established by law.

In Illinois, Indiana, Michigan, New Jersey, Virginia and Louisiana, the state pharmaceutical associations have not only endorsed but secured the introduction of prerequisite bills into the law-making bodies, although for various reasons these efforts were not successful. In the last-named State the bill passed the legislature but was vetoed by the governor because of an objection in no way connected with the prerequisite feature. Opposition, not unlooked for, was encountered not only from private quiz schools and correspondence schools but also in some instances from druggists themselves, who failed to grasp the real intent and importance of the proposed legislation.

Frequently the mistake has been made of including in one bill several amendments to the state pharmacy law, each amendment having a different object and each entailing a certain amount of opposition; the opponents of these various amendments were thus able to combine and defeat the bill. Prerequisite amendments should be introduced as such, considered independently and accepted or rejected on their merits.

It is worthy of note that where a referendum vote of the pharmacists of the state has been taken, to secure an impression on prerequisite legislation, the result has been overwhelmingly favorable.

In the Illinois referendum on the prerequisite in 1912, the vote stood 965 for, to 247 against a referendum vote, while in Minnesota, on the same issue, a very recent voting resulted in over eighty percent for the prerequisite.

In addition to the states above mentioned and where prerequisite legislation will again be presented at the coming legislative sessions, the state associations of Colorado, Minnesota, North Carolina and South Carolina have indorsed the prerequisite and will stand sponsor for bills having this for their object at the next meeting of their state legislatures.

* Annual meeting of the American Conference of Pharmaceutical Faculties, Philadelphia, September 2, 1916.

Turning now to the other phase of prerequisite legislation, the preliminary education, we find that professional training has been linked with a minimum of secondary school preparation in the prerequisite laws of all the states. The New York law, the pioneer in this field, originally required one year of high school or its equivalent as determined by regents' examinations. This was amended at the last legislature so as to increase the high school preparation to two years. Ohio also requires two years, Pennsylvania one, while North Dakota insists upon the full four years of secondary schooling. In Cuba and Porto Rico graduation from high school is required.

In many states where the *professional* training is *not* demanded, the amount of high school preparation is either fixed by law or by the regulations of the board of pharmacy, thus South Dakota and Oklahoma require graduation from high school, Florida, Iowa and Michigan, two years of secondary instruction, and Illinois, Kansas, Missouri, New Mexico, Oregon, Texas, West Virginia and Wisconsin, one year of high school before admittance to the licensing examination.

It is unfortunate that, in practically all cases, the proof of high school training is not required until the candidate completes his drug store experience and is ready for the state examination for qualified pharmacist. In justice to the young men themselves, the high school training should be truly a preliminary requirement and the practical experience required by law should date from the satisfaction of this requirement, preferably by having a system of apprentice registration such as is already in effect in a few states.

The deteriorating effect of low preliminary requirements is now made evident through the action of certain high schools in offering courses in pharmacy, a condition that never would be tolerated in medicine, dentistry or law where the preliminary preparation is a complete high school course or better.

ARGUMENTS FOR THE PREREQUISITE.

1. The strongest argument for prerequisite legislation is that the public welfare demands it. Who would think of employing a physician who is not a college graduate? Yet the knowledge and skill of the trained physician may be nullified by entrusting his prescriptions to an ill-trained pharmacist. The laity are sufficiently informed regarding these dangers but the impression is general that when the state certifies to the training of the pharmacist by granting him a license, he, of course, must be a college-trained man. It is no answer to these arguments to say that self-prepared applicants must pass the same examination as the college man. We know that this does not imply equal proficiency. One has been prepared for life, the other for the examination merely. The college-trained man is a much safer one than is the self-trained. Experience in a drug store is a variable factor, it may mean much or little, but a college course means something definite, or which can be definitely determined by investigating the college. Theory and practical experience are both necessary to make a capable and well-equipped pharmacist. One is not more necessary than the other. Pharmacy laws everywhere require practical experience. It is certainly as important to insist just as strongly on college training. Laws are for the benefit of the people, and their welfare should be the first consideration.

2. It is better for the pharmacist himself that he be a college graduate; in fact, it is an injustice to the young man entering pharmacy not to require it. Both physicians and patrons will have more confidence in the college-trained man; he will have more confidence in himself.

He will have a better appreciation of the value of accuracy and of the importance of seemingly small things. He will be capable of determining the strength and purity of the medicines which he handles. He will understand the importance of having his preparations come up to the standard requirements and will know how to keep them from deteriorating.

3. The general establishment of the prerequisite of college training would add greatly to the professional standing of pharmacists. We all recognize the desirability of legislation that shall restrict the sale of drugs to those whose education and experience fit them for this responsibility. But it will be impossible to secure such legislation until we can demonstrate that the pharmacist is really an educated man. The only means of combating the *dispensing evil* is through the better training of pharmacists themselves. When pharmacists

can show that they are trained specialists in dispensing, *then* they can successfully demand that dispensing be made their exclusive privilege.

4. The prerequisite would lessen to a considerable extent the present ruinous over-competition and would ultimately enable druggists to have enough business in drugs so that they would have a chance to practise real pharmacy and not be threatened with degeneration into mere dispensers of soda water, candies and sandwiches. There are already a sufficient number of drug stores to satisfy the demand for drugs and medicines until the population is doubled. Why should we add largely to this number by making it easy to enter pharmacy? The newcomers who lack college training have seldom been impressed with professional ideals and are the first to demoralize the business in their efforts to keep going; price-cutting and deterioration of quality, both of drugs and service, follow as a natural consequence. No form of restriction is feasible except that based on higher educational attainments.

5. The prerequisite would result in bringing into pharmacy a better educated and more desirable class of young men and women who would be attracted by its professional character. It can scarcely be expected that high school graduates will enter a calling where they must start on the same footing as boys from the grades. They will naturally give preference to a vocation where their high school education counts for something.

6. The present and future advancement of pharmacy require a better preparation and professional preparation. The sciences underlying pharmacy, notably chemistry, physics, botany and physiology have developed with wonderful rapidity during the last decade. Medicine has also made great forward strides. Pharmacy must keep up the pace, in a measure at least, or lose entirely its identity and its professional status.

7. Prerequisite legislation is bound to come. It is now established by law in five states, including the two largest in population. Nowhere has any serious effort been made to repeal a prerequisite law. Pharmacists in other states are awakening to the fact that public sentiment will eventually demand such laws. Is it not better that pharmacists themselves should initiate laws affecting pharmacy rather than to leave this to outsiders? Let pharmacists have the honor of bringing about the new and better conditions.

ARGUMENTS AGAINST THE PREREQUISITE ANSWERED.

Answering now the arguments that have been advanced against the prerequisite at various times, these are, in general:

1. *That the prerequisite would impose a hardship on those clerks who have already entered pharmacy and have spent some years in learning it.* This argument is based on a misconception. All prerequisite laws have allowed a reasonable time for those already in the business to qualify and in most instances this allowance has been exceptionally liberal.

2. *That it would greatly increase the wages of drug clerks.* The operation of the prerequisite laws in New York, Pennsylvania and Rhode Island has not borne out this contention. There has been some increase in wages, comparable to the general increase in living cost, but this has not been proportionately more in New York with a prerequisite law than in Illinois without one.

3. *That it would subordinate the boards of pharmacy to the colleges.* Some opponents of the prerequisite have made much fuss about the fearful results of turning over the boards of pharmacy to the colleges. Of course this is mere claptrap. Where prerequisite laws are in effect, the boards effectively control the schools and check upon their work.

4. *That the prerequisite is urged by the professors and does not represent the views of retail druggists.* This has already been answered in another part of this report. Referendum votes in Illinois and Minnesota, the only states where such votes have been taken, show that four-fifths of the druggists favor it.

5. *That it would keep the "poor boy" out of pharmacy.* At the present time, when the opportunities for education are so numerous, there is no excuse for a poor boy being kept out, if he is made of the right kind of stuff. Not only are scholarships offered in several schools, but in practically all schools, and especially those in the large cities, there are many opportunities for employment and self-support. Young men of reasonable "grit" and good health need not be kept from attending a school of pharmacy through lack of money.

6. *That it would cause a shortage of druggists.* As already stated, there are enough druggists now qualified to care for all drug work for ten years to come. Illinois has six

thousand registered pharmacists and three thousand drug stores. A third of that number would suffice to supply the strictly drug service for its six million people.

7. *That college courses are too theoretical.* If this is true the objector has in mind the wrong kind of a college. Here is where the boards of pharmacy could exercise supervision. Laboratory instruction of the most practical kind has been greatly increased during recent years and college courses in pharmacy are better than ever before.

8. *In country towns and thinly-settled districts professional knowledge and skill are seldom required.* True, possibly, but human life is as valuable in the country as in the city and the dangers of error just as great. Small communities are entitled to safe and efficient pharmaceutical service as much as are populous centers.

9. *That while the prerequisite is coming, the time is not yet ripe for it.* The time *is* ripe for the pharmaceutical prerequisite. Already other medical branches are leaving pharmacy far behind. The popular estimate of pharmacy has fallen so low that it is considered a fit subject for a high school course. No other branch of medicine would submit to such humiliation. Unless action is taken soon, there will be little left of pharmacy to save; it will have been engulfed in the rising tide of commercialism.

SUMMARY.

1. Prerequisite legislation has had a fair test. It has been in operation in New York for eleven years. During this period four other states have adopted it by law and two by state board regulations. No serious efforts have been made to repeal these laws or regulations. The results have been satisfactory to the pharmacists of these states. There has been no shortage of clerks, nor have clerks' wages been unduly advanced. Entrance requirements to the colleges have been increased with the result that a better educated class of young men are entering pharmacy.

2. Public welfare demands that the pharmacist be well trained. This training is not unduly expensive. Ambitious and energetic young men may be self-supporting, or nearly so, while attending the schools of pharmacy. Quiz courses and courses by mail do not give the right training. Self-trained men are unlikely to be well trained.

3. The present and future welfare of pharmacy demand better preparation, both preliminary and professional, on the part of the young men entering its ranks. The underlying sciences and the related medical branches are developing rapidly: pharmacy must keep up or lose caste altogether.

4. Prerequisite legislation is coming. It is better that pharmacists should direct it and adjust it to their conditions rather than to have it framed by outsiders. Properly drawn prerequisite laws will work no hardship on anyone.

RECOMMENDATIONS.

The slow progress of prerequisite legislation in some of the states is due to the indifference and the lack of information on the part of druggists, rather than to any feeling of hostility. In correspondence with the state association secretaries, a common expression is: "The prerequisite is coming but the time is not yet ripe for it." The druggists must be informed regarding prerequisite education and what it aims to accomplish. They must be frequently reminded of its bearing upon pharmaceutical progress. In short, they must be educated to an appreciation of its importance. Publicity must be sought, not only through the pharmaceutical journals, but also in the medical journals and in the newspapers.

As a first step in the education of druggists the legislative committee of this joint body should get into communication with the legislative committees of the state associations and should supply them with copies of this report or of such parts of it as may seem desirable. The request might be made that when the state legislative committee reports to its state association, a copy of this report be included.

A joint committee of the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties should be appointed with instructions to secure as much publicity as possible for the prerequisite movement.

The support of physicians individually, as well as of the state medical societies, should be sought. As a rule, physicians are quick to appreciate the importance of professional training based on adequate high school preparation.

REPORT OF THE COMMITTEE ON THE PRESIDENT'S ADDRESS.

The Committee on the President's Address, consisting of Messrs. Wm. B. Day, J. W. Sturmer and E. L. Newcomb, reported favorably on section (*a*) of the first recommendation, and relative to section (*b*), the committee recommended the "high school courses of pharmacy" be investigated and a report thereon be made at the next annual meeting.

Recommendation No. 2 was reported favorably; the Conference, however, changed the mandatory requirement to a recommendatory provision until 1918.

Recommendation No. 3 was adopted after striking out the words "postal card," inserting the word "proposed" before "referendum postal card," and omitting the last sentence ot the recommendation.

Recommendation No. 4 was disapproved, so that the President may appoint a member of any institution, holding membership in the Conference, on committees.

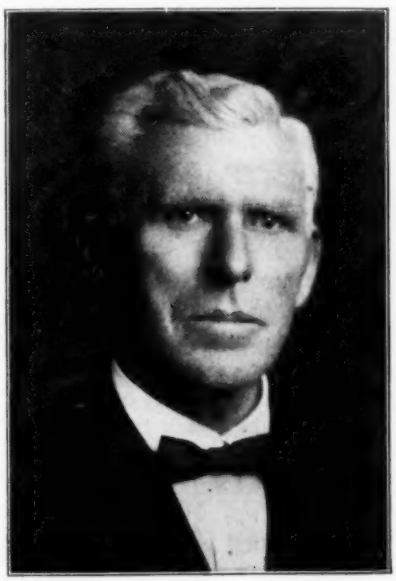
Recommendation No. 5 was changed, placing the duties involved in the hands of the Executive Committee instead of the President.

Recommendation No. 6 was disapproved and the seventh recommendation approved.

R. A. Lyman was chosen president, Theodore J. Bradley, vice-president, and Wilbur J. Teeters re-elected secretary-treasurer. Messrs. Julius A. Koch, H. V. Arny and Wm. B. Day were elected to serve as the Executive Committee and C. M. Snow was elected as a Conference member of the Syllabus Committee.

The American Pharmaceutical Association was requested to print the report of the Committee on Prerequisite Arguments in an early issue of the JOURNAL, and that reprints be made for distribution.

Chairman Henry Kraemer reported for the Advisory Commission on Examinations, and on his suggestion it was ordered that six sections of the Committee be appointed, so constituted that the different branches, for which examinations are held and taught in the Colleges of Pharmacy, will be represented.



JOHN C. BURTON, Stroud, Oklahoma
Retiring President, N. A. B. P.

H. V. ARNY, New York City
Retiring President, A. C. P. F.
Elected Reporter on the Progress of Pharmacy, A. Ph. A.

SYNOPSIS OF PROCEEDINGS OF THE THIRTEENTH ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION BOARDS OF PHARMACY

The thirteenth annual convention of the National Association Boards of Pharmacy was called to order at 10.45 on Thursday morning, August 31st, in the Assembly Room of the Bourse Building, Philadelphia, by the President, J. C. Burton, of Stroud, Oklahoma.

W. L. Cliffee, or the local committee, extended a hearty welcome to the visiting members, which was responded to by John Culley, of Utah.

President John C. Burton called on Secretary H. C. Christensen, of Illinois, to call the roll.

After the roll the Secretary announced that twenty-eight States were represented.

John A. Weeks, of Texas, addressed the Association on the subject: "The Responsibility of Pharmacy Boards." Mr. Weeks said in part—"The member of a Board of Pharmacy is in a measure responsible to every patient and every physician in his State for the work done by the licentiate of his Board. The judge on the bench into whose hands is thrust the power of passing the death sentence is no graver or more responsible dispenser of justice than the man who passes on the fitness and qualifications of those who are to compound remedial agents for the sick. The examination of a candidate to practise pharmacy should be conducted without fear or favor and each candidate should be given the grade he earns.

"A very grave responsibility confronts us when we realize that American Pharmacy can never be stronger, better or more efficient than its state examining boards. When you place an o'k on an unqualified man or woman you have perpetuated a wrong that can never be righted. The status of American pharmacy is established by the State Boards. Neither the pharmacists nor the schools can establish the standards, since the State Board is the gateway through which the pharmacists must enter the craft. I do not believe all boards are as careful as they should be, either in the preparation of the questions or in the grading of papers. I do not believe we take the position as seriously as we should or appreciate our responsibility to the fullest extent."

Mr. Weeks urged that a standard of preliminary education be required of all those who seek to practise pharmacy, and that examinations be standardized, so that "registered Pharmacist" will mean the same thing in every state.

The address was discussed by Messrs. Meredith, Diekman, Christensen, Diner, Ostend, Leverty and others.

At the suggestion of J. A. Leverty, the subject "Identification of Applicants for Reciprocal Exchange" was discussed with the result that a committee was appointed by the Chair to draft a plan of identification. H. L. Meredith, Maryland; H. L. Haussamen, North Dakota; and J. T. Baltar, Louisiana.

This Committee's report, which was presented by W. G. Haussamen, recommended a blank similar to a Traveller's Check to be signed by the applicant and attested by three citizens of the city in which the applicant resides; one of the witnesses shall be a former employer of the applicant or a registered pharmacist. The report of the Committee was adopted.

At the opening of the afternoon session on motion of H. C. Christensen, the

application of the Mississippi Board of Pharmacy for *active* membership and the application of the New Jersey Board for *associate* membership were accepted.

President Burton at this point requested J. W. Gayle of Kentucky, vice-president, to take the chair, and then proceeded with the "President's Address." Recommendations were as follows:

First, That a committee of at least five be appointed from this body to present to the Section on Education and Legislation of the American Pharmaceutical Association such provisions as may be adopted by this Association; and further to coöperate in joint session with that Section, with a view to obtaining the adoption of a number of "provisions" on matters of general interest to pharmacy that may be furnished to state board or state association members who may ask for suggestions regarding desirable changes in state pharmacy laws.

RECOMMENDATION No. 2: The same committee to submit resolutions of interest that may be passed by the N. A. B. P., to the A. Ph. A., for its endorsement.

RECOMMENDATION No. 3: Appointment of a committee on "Higher Educational Standards" to work with a similar committee from the A .Ph. A. and N. A. R. D.

RECOMMENDATION No. 4: Appointment of a committee of three on "Relations of Colleges with Boards," to work with a similar committee from the Faculties.

RECOMMENDATION No. 5: That the joint committee of the Faculties and Boards on "More Satisfactory Examination of Candidates for Graduation and Candidates for Board Certificates" be continued.

RECOMMENDATION No. 6: Be it hereby resolved that we request that the section on "Education and Legislation," of the A. Ph. A., in joint session with the Faculties and Boards, to give consideration to a "Prerequisite Provision" (graduation from school or pharmacy clause), that when enacted in a state pharmacy law, will not be retroactive in its applications, thereby preventing the Board of Pharmacy of such a state from granting reciprocal registration (both states being "Active" member states of the N. A. B. P.) to applicants who are not graduates of schools of pharmacy, but who at the time of passing examination and becoming registered in their state, complied with all the requirements of the laws of the state pertaining to registration of pharmacists, such laws having equal requirements at the time, with the state in which the applicant may later seek to gain reciprocal registration.

On motion of H. L. Meredith, Chairman Gayle appointed W. H. Cousins, Texas, H. A. Eaton, Iowa, and D. R. Millard, Maryland, as a committee on the President's Address. The committee later reported favorably on all recommendations made by the President, and on vote of the Convention they were adopted.

On resuming the Chair, President Burton called on George M. Beringer, Jr., of the New Jersey Board of Pharmacy (this Board was elected to "associate membership" at the morning session). Mr. Beringer stated that although the New Jersey Board had only just become affiliated with the Association, they had always taken an active part in furthering the best interests of pharmacy and that for some time had been alive to the good work being done by the Association, and were glad to be placed in a position to better give assistance in bringing about continued progress.

Chairman Lawrence C. Lewis of the Executive Committee presented the report for his committee, which was referred to a committee consisting of the following named members: W. E. Sherriff, Kansas; Leo L. Mrazek, Illinois; H. B. Purdy, Connecticut. The Committee later reported favorably on the following recommendations which were then adopted by the Association.

RECOMMENDED, that annual meetings of the N. A. B. P. be held at the same place as the A. Ph. A. Conventions, on Monday and Tuesday of the same week in which the A. Ph. A.

convention is held. Provided, however, that the program of sessions of the N. A. B. P., the A. Ph. A. and the joint sessions of the Faculties and Boards must be arranged so that the most important sessions of these bodies will not conflict with each other. Otherwise, it is suggested that it might become necessary to recommend that the N. A. B. P., and the A. C. P. F., hold their meetings either just preceding or just after the A. Ph. A. Convention. It was also suggested that unless the A. Ph. A. Convention would be held in locations favorable to the largest possible attendance, it might become necessary for the Boards to hold their annual meetings separately from those of the A. Ph. A.

RECOMMENDED, that the Secretary attend board of pharmacy examination meetings in the various States whenever possible: with a view of bringing about compliance with recommendations of the Advisory Examination Committee (of which Secretary Christensen is Chairman), with regard to more uniformity of examinations in the different States.

RECOMMENDED, that changes in the new United States Pharmacopœia be not taken into consideration in preparing boards of pharmacy examination questions until after January 1st, 1917, and that for the first year after that date only such changes as apply to the more potent drugs and their preparations be given consideration.

RECOMMENDED, that State boards follow as closely as possible suggestions of the Advisory Examination Committee of the N. A. B. P. with regard to examination questions and methods.

RECOMMENDED, that members of boards of pharmacy meet with those of adjoining States during examination periods whenever possible.

RECOMMENDED, that since the Supreme Court of the United States has handed down a decision that the possession of narcotics does not constitute a violation of the "Harrison Act," and since we believe this decision has largely nullified the intentions of the law, we recommend and urge that Congress enact an amendment to the Harrison Law whereby the main objects of this law be not impaired or defeated.

Mr. H. L. Meredith, chairman of the Legislative Committee, was called on for the report of that committee. Recommendations of the committee that were adopted are as follows:

No. 1: Providing that it shall be unlawful for any person, unless he is registered with the United States Collector of Internal Revenue in the District in which he resides, to sell, dispense or give away any preparation or remedy containing any opium or cocoa leaves, their salts, alkaloids or derivatives or other potent drugs or chemicals which may be enumerated in the so-called Poison or Anti-narcotic laws of the State or District in which he may reside. A detention as well as monetary penalty to be attached. Enforcement to be placed in the care of the State's Pharmacy Board.

No. 2: Providing a heavy penalty for false representation as a registered pharmacist, licentiate in pharmacy, assistant pharmacist, etc.

No. 3: Requiring that every drug store be supplied with a copy of the latest edition of the United States Pharmacopœia and National Formulary. Penalty suggested to be double the cost of the edition mentioned plus cost of prosecution. Enforcement with the Board of Pharmacy.

No. 4: Requiring that the Registered Pharmacist who is in charge of a pharmacy or "department of pharmacy," whether proprietor or manager, shall in addition to displaying his certificate, have his name affixed either upon separate or composite labels placed on medicinal agents, while in charge as Registered Pharmacist. Also there shall be caused to be conspicuously displayed over the entrance to the drug store or department of Pharmacy the name of the Registered Pharmacist in charge. Fine for violation to be paid by the owner or employer. Enforcement in charge of Board of Pharmacy.

No. 6: Providing for the appointment by the N. A. B. P. of a committee of five members from this body whose duty it shall be to enter into conference with the proper officials of the Internal Revenue Department, with the end in view that of eliminating from the processes of the Harrison Law such drugs and chemicals which from their very nature automatically are eliminated from the class of habit-forming drugs.

No. 7 and 8 were rejected.

No. 9: Your Committee recommends that the President, Secretary and Chairman of the Executive Committee constitute a committee whose duty it shall be to confer with the Program Committee of the A. Ph. A. to the end that the more important sessions of the two bodies be so arranged as to entail the least possible conflict.

President Burton next called for the report of the Advisory Examination Committee, and Secretary Christensen read that report. The main thoughts centered on greater efficiency, and it was pointed out that the time would come when the examiners would be required to submit to an examination relative to their qualifications for these important positions. This promotion should be encouraged by the boards of pharmacy.

The report of the Advisory Committee was adopted.

The President appointed a committee composed of John A. Weeks, Texas, Edward Bloomfield, Kentucky, and Edward Walsdorf, Louisiana, to draft a resolution with regard to time of filing applications for Reciprocal Registration. Mr. Bloomfield made the following report:

All applicants for Reciprocal Registration must file their applications with the Secretary of the Board in which he desires to reciprocate within ninety days after receiving the official application blank from the National Secretary. If said applicant for Reciprocal Registration is rejected by the Board of Pharmacy then all fees shall be returned to him (except the $1.00 fee to the Secretary of the Board of Pharmacy, from which he applied, for certifying to registration and grades). If said applicant fails to file his application with the Secretary of the Board within ninety days after receiving the same, then said application blank shall be void and said applicant shall forfeit the entire fee. The Secretary of the State Board shall date said application blank as of the day received.

The report of the committee was adopted, to go into effect the first of October, 1916.

After discussion regarding ways and means of increasing revenue to the Association, a recommendation to increase the annual dues of "Active" member states of the N. A. B. P. from $15.00 to $35.00 was adopted. The fee for application blank for "reciprocal registration" was increased from $5.00 to $15.00.

President Burton called for the report of the Nominating Committee, which was read by H. L. Haussaman, recommending the following officers for next year: President, Lawrence C. Lewis, of Alabama; first Vice-President, John A. Weeks, of Texas; second vice-president, D. W. Ramsaur, of Florida; third vice-president, John A. Leverty, of Connecticut; secretary, H. C. Christensen, of Chicago; treasurer, F. W. Ward, of Memphis. The following were elected to serve on the various committees; Executive Committee, E. G. Cox, Missouri; Chairman of the Advisory Examination Committee, H. C. Christensen, of Chicago; Syllabus Committee, Charles R. Skinner, of Vermont.

The report of the Committee was adopted and the gentlemen named were elected as officers of the Association for the ensuing year.

The Session was adjourned to meet Saturday evening at half past eight.

Adjourned Fourth Session—Saturday evening.

President Burton called the Association to order in the Assembly Room of the Rittenhouse Hotel, at 8.45 o'clock and called for the report of the Auditing Committee, which report was presented by E. G. Cox, of Missouri, and adopted.

The installation of officers then took place and the convention adjourned.

JOINT SESSION OF THE NATIONAL ASSOCIATION BOARDS OF PHARMACY WITH THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

The first Joint Session of the National Association Boards of Pharmacy with the American Conference of Pharmaceutical Faculties was called to order in the Assembly Room of the Rittenhouse Hotel, Philadelphia, at 10.30 o'clock Saturday morning, September 1, 1916, by President H. V. Arny of the Conference, and after a few introductory remarks by Professor H. P. Hynson, Baltimore, the President requested Secretary H. C. Christensen of the Boards to address the Joint Session.

Mr. Christensen stated that the object of the meeting was the getting together of the two Associations and the bringing about of more favorable conditions between the Boards and Faculties. He thought a good deal of progress had already been made.

President Arny next called for the address of President J. C. Burton of the Boards following which he read his address, both of which were discussed by Jacob Diner, George C. Diekman, H. P. Hynson, C. B. Jordan, H. C. Christensen, L. E. Sayre, Wm. C. Alpers, W. E. Sherriff, H. H. Rusby, H. M. Whelpley, Philip Asher, Jacob H. Rehfuss.

President Arny next called for report of Committee on Prerequisite Arguments. This report was made by Professor W. B. Day and referred to the Executive Committees of the two Associations.

President Arny called for the report of the committee on "The Fairchild Scholarship," which was presented by Dr. W. C. Alpers, and approved.

HOUSE OF DELEGATES, AMERICAN PHARMACEUTICAL ASSOCIATION.*

THE CHAIRMAN'S ADDRESS.

BY H. P. HYNSON.

To the Honorable Members of the House of Delegates:

Gentlemen:

Possibilities of organization are far beyond finite conception. Respect for organization and disregard for the individual is the very first thing the student of nature learns. Why we allow ourselves to stand alone in anything is a great wonder, especially when we have such striking illustrations of the power and effectiveness of systematic organization, as is shown by the various governments, particularly our own state and national organizations, by the great and good Roman Catholic Church, by the political parties which really control our government and, more to our present purpose, by the American Medical Association. It is a pattern in form, in system, in application, in consistency and, of course, in effectiveness and in accomplishment.

Organization in nature and of nature begins with a most radical conception and prospers most at the apparent sacrifice of the individual. The qualifying adjective "apparent" must be used, because if organization did not finally advance the interest of the individual it would be a failure. It must bring the greatest good

* Atlantic City meeting, A. Ph. A., 1916.

to the greatest number. Yet, in the beginning, the individual, for the good of the myriads to follow, must lay down his life, if need be.

In the work of a committee of the Conference of Pharmaceutical Faculties as a minority number, I have this to say:

Any organization is better than no organization. Organization means co-operation, the sinking of individual interests. The worth, strength, effectiveness, helpfulness of an organization is exactly consistent with the extent of personal or individual sacrifice, which sacrifice is compensated for in a thousand-fold measure by the direct returns accruing from the fortunate organization that has entailed a perfect abrogation of individual interest. One has only to examine and study successful and effective organizations of any and all kinds to discover that they are helpful and respected because they demand the subjugation of individual interests to and for the general good. In the most noticeable instances, property, and even life, are at the command of the co-operative organized body, whatever it may be. No such extreme ordering of things is contemplated in the present instance, but it is thought that individual interest should be, in all affairs of public concern, of last consideration. One must have but little imagination and small views of the future and its yieldings, if he cannot see the wonderful effect the educational facilities of one generation has upon the next and upon all following generations. It is possible for those who hold educational responsibilities of any phase, within their keeping, to retard, and greatly retard, the betterment of mankind. But they can only retard, they cannot forever hold back, progressive tendencies, yet their responsibility for failure to join, even at the great individual sacrifice, any movement that has for its object the general betterment of any feature of educational progress with which they might have co-operated, must, finally, in the completed history of education, bring reproach far and away beyond any prestige that may have been won by a less generous policy.

It is, therefore, most respectfully suggested that if we are really desirous of promoting pharmaceutical education and are really interested in bringing to a creditable level *all* the schools of pharmacy that might be affected by a more generous co-operation, and, if we are willing to do our best to eliminate all institutions that will not or cannot take such a stand, we must have an organization of the schools or colleges of pharmacy, that is an organization co-operating for the general pharmaceutical good and not one that encourages and assists the strong and makes more difficult the progress of the weak. Such an organization is not an impossible conception; such generous impulses are conspicuous in the world to-day. In fact, it is the spirit that pervades all fields of creditable endeavor. Any one who does not realize and enjoy this happy condition is most unfortunate and bases his respect for the more sordid operations upon the fallacious evidence of personal advancement.

The gathering together in annual conference of a fair number of faculties during the last fifteen or sixteen years has been very beneficial. Probably it has been just the educational means required to tell us the kind of an organization we now need to do the most good. At this time, a large majority of those who have participated regularly in this Conference are still active, holding the invaluable experience and knowledge this free and unrestricted Conference has given them. This particular knowledge and this unusual experience entails a special and most serious responsibility. Who should be better fitted to bring about a real organization of teaching schools of pharmacy, which are willing and able, willing and able, it is repeated, to conform to any adopted plans and become subject to the absolute control of the whole, being assisted and advised by a similar organization of the boards of pharmacy.

The reorganization of this Conference may be the preferable way. An alternative is the continuation of the Conference for a time for what it may be worth and, in addition, the formation of an intraorganization as a nucleus for the proper organization to be developed in the near future. Will not a few of the Conference members be willing to set an example and the pace?

If we can do no more at this meeting, we can profitably discuss such organizations as control, or seek to control, other phases of technical education. We can provide for a really careful investigation of other similar bodies by a competent committee which will

generously study educational organizations, generally; we can authorize the presentation of some progressive plans whereby those coming into the conference may be more closely bound together and whereby those who are in may gradually change their relationship and, best of all, we can examine ourselves and perhaps be induced to see that we cannot possibly, by ourselves or individually, devise plans which will best conform to the needs and betterment of future pharmacy. Let us look to *real* co-operation in pharmaceutical education and pinch ourselves into believing that neither our prestige, nor our power, nor our popularity, will win the salvation of the endless multitudes who will follow us.

So much for the principles of organization, the principles that order the abnegation of self, that acknowledge the weakness of the individual and the greater strength, the greater fairness and the better accomplishments of the many. One must become thoroughly impressed with these fundamental principles of organization before he can become happy and enthusiastic in organization work, and the force of these truths must be driven far into his understanding by an intelligent knowledge of what organizations do and have accomplished. You may have no faith in your pharmaceutical bodies and may strive to discredit them, but they are controlling you. Yes, you and your business and your welfare.

As chairman of a committee on The Federation of all Pharmaceutical Bodies of the Conference of Pharmaceutical Faculties, I have written as follows:

I have been compelled to give consideration to three phases of organization for this conference and the convention of the A. Ph. A. These different phases are: basic organization, involving the principles of co-operative work; general organization, which refers to the subject directly under consideration; and special organization which, in this instance, refers to the House of Delegates of the A. Ph. A.

The most of you have heard my feeble but best-I-could-offer plea for the unselfish organization of the schools of pharmacy and I beg you to bear in mind the elementary nature of that plea. It was for the subjugation of self or self-interest to the general good, which, to the point, means that each of the pharmaceutical bodies, that might be federated for the greater benefit of pan-pharmacy should begin to bring about this most desirable end by training itself and by, finally, making itself willing to forget the direct effect of such a combination or federation. Like individuals, these separate organizations must, in the more liberal fashion, conclude and resolve that no matter how difficult the readjustment may be, the difficulty will be met and overcome for the great good of the larger number of organizations involved.

In any contemplation of this subject, we, as one of the bodies that may be federated, must continually bear in mind that *this is not to be the larger body, not even the larger part of it*, but at best, only an equitable part. Certainly we cannot be helpful in promoting the formation of such a forceful combination as contemplated, if we do not favor the utmost liberality or appear as unwilling that the authority of the confederated bodies shall continue inviolate so far as their special affairs are involved. There will, of course, be a clear definition of provinces and a full surrender of all mutually applying subjects.

The pharmaceutical bodies of the United States may be truthfully divided into two great classes: those of national significance and those of local scope. According to the Druggists' Circular, there is but one state and but one of our insular possessions without pharmaceutical organization, so that we may positively state that pharmacists are extensively organized, but not effectively and impressively organized.

Again it may be most truly stated that every interest, or every phase of pharmaceutical activity, is separately organized, but even they are not impressively organized. They are not linked together as an impressive and forceful whole.

These organizations of distinct interests; these organizations, high, low, little and big, local, state and national cannot be directly connected; they must be divided into classes and the classes systematically and consistently linked together. This is graphically shown in the accompanying diagram.

The Federation of all Pharmaceutical Bodies

PAN PHARMACY A. PH. A.

The Phases of Pharmacy

American Drug Trade Conference

Wholesalers	N. W. D. A.
Manufacturers	N. A. M. M. P. A. A. P. C.
Clerks	N. A. B. C.
Boards	N. A. B. P.
Proprietors	P. A. A.

A. Ph. A. Sections

- Scientific
- Education and Legislation
- Commercial Interests
- Pract. Pharm. and Dispensing
- Historical
- Woman's W. O N. A. R. D.

Retailers N. A. R. D.
Local Associations of Retail Druggists

Teachers A. C. of P. F.
College Alumni Associations

Geographical Pharmacy

HOUSE OF DELEGATES

State Associations

Alabama	Nebraska	
Alaska	Nevada	
Arizona	New Hampshire	
Arkansas	New Jersey	
California	New Mexico	
Colorado	New York	
Connecticut	North Carolina	
Delaware	North Dakota	
District of Columbia	Ohio	
Florida	Oklahoma	
Georgia	Oregon	
Idaho	Pennsylvania	
Illinois	Rhode Island	
Indiana	South Carolina	
Iowa	South Dakota	
Kansas	Tennesse	
Kentucky	Texas	
Louisiana	Utah	
Maine	Vermont	
Maryland	Virginia	
Massachusetts	Washington	
Michigan	West Virginia	
Minnesota	Wisconsin	
Mississippi	Wyoming	
Missouri	Porto Rico	
Montana	Philippines	

COUNCIL A. Ph. A.

Local Branches

Baltimore
Cincinnati
Chicago
Columbus
Denver
Indianapolis
Montana
Nashville
New England
New York
Northern Ohio
Northwestern
Philadelphia
Pittsburgh
San Francisco
St. Louis
Washington, D. C.
Detroit
West Virginia
Cuban

The desirability of consummating such a scheme is too obvious to be seriously argued and a general argument will not be presented. One feature is just now before us: the linking up of the state and territorial organizations and more closely connecting them with their mother, the American Pharmaceutical Association. The remarkable similarity of the character of membership and character of work of these state organizations to that of the mother organization shows the "fitness of things."

Now we come to the special subject of making the House of Delegates a body of state association delegates only. It may be asked, what will be the advantage? The answer is the same that would be made to the question: "What is the advantage of a comprehensive, well-ordered organization?" or "What is the advantage accruing from the union of these United States?" Such unions are not merely advantageous, they are an absolute necessity. Every reason that has ever been offered for the confederation of the states of this Union may be offered for the confederation of the state pharmaceutical associations and these reasons so far outweigh any little interest that a delegate representing any other kind of organization may have, that it is scarcely believable that any opposition will come from this source.

It is very safe to say that the A. Ph. A. needs the state associations much more than the latter need the A. Ph. A., and the A. Ph. A. does need something and needs that something very badly to make it the representative of present-day American Pharmacy. It is really humorous and smacks of *opera bouffe* to claim that three thousand individual members, individual members, mark you, not delegate members, variously scattered over the domains of Uncle Sam, represent the great interests of American Pharmacy.

The organization of the collective interests of pharmacy into the A. Ph. A. and into divisional bodies, the state associations and the organization of the varied interests into separated bodies is most fortunate, but it must be obvious to every one that order and helpfulness cannot come out of any effort that has for its object the corralling of all these differently constituted associations into a hap-hazard delegate body, such as the present House of Delegates. It is unthinkable that such a conglomeration of unequal and differently interested delegates could do more than "pass the time of day."

The A. Ph. A. has failed to grow, has failed to grow either in size or strength at all commensurate with the interests it is supposed to represent, and it needs treatment, or perhaps better, needs feeding and needs that feeding very badly.

The membership, the individual membership, in 1860 was about 250. In 1901 Knox presented the conditions of membership in an able and graphic manner. In 1881 it was 1225, in 1891 it was 1909, in 1900 it was 1263, now it is about 3000. The Association never did represent ten percent of eligibles and now I do not believe it represents five percent of those eligible to membership.

It is absolute folly to contemplate a national body of all classes and kinds of broadly called pharmacists, made up of individual members. A truly representative body of this scope must, of necessity, be a delegate body and such should be earnestly advanced by all those interested in the future of pharmacy.

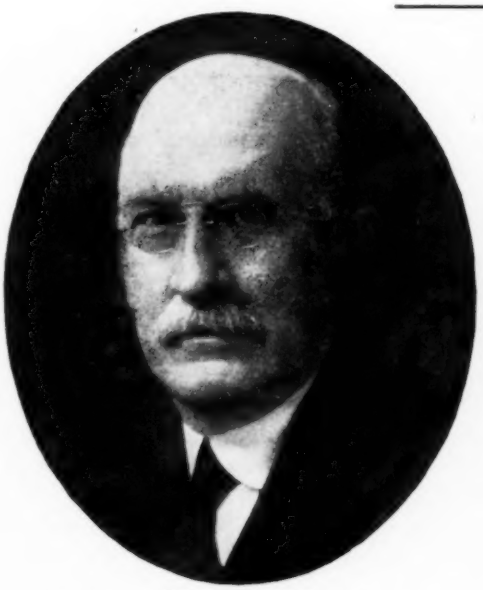
It may be asked, why will the N. A. R. D. not answer as such a delegate body? The answer is that the N. A. R. D. was organized and is maintained specifically to represent retail druggists and to defend their interests and, while retail druggists are numerous, they are only a part of the pharmaceutic body. Again, the N. A. R. D. has descended from an all-delegate body as first proposed and is unfortunately a mixed organization of delegates and individual members. I remember something about the organization of the N. A. R. D. The all-delegate organization was surely uppermost at its birth. Some of us were quite unpopular

in those early days, because we thought the state associations should not send delegates, since the state associations were composed of all sorts and conditions of pharmacists, and the state associations and their non-affiliation have ever been a thorn in the N. A. R. D. flesh. Those who opposed the voting power of delegates from the A. Ph. A. seem to have been justified by the reduction of the number of delegates, from five to three, and these, as they should be, will finally be denied.

The state associations are so nearly like the A. Ph. A. in every respect that it will be perfectly consistent and eminently proper for a combination to be formed. It is interesting to note one state association has already formed its own Scientific and Commercial Sections with success, and two others have anticipated the action of the A. Ph. A. in authorizing divisional district delegates. Casual reading of the proceedings of the various state associations shows, as everybody knows, that their work is strikingly akin to the mother-body's doings.

But more to the point is the proof that there is a community interest in these associations upon many important matters, for instance, the price maintenance measure now before Congress; the regulation of the sale of liquors, especially in prohibition states. The model pharmacy law of friend Freericks must finally be discussed by all the state associations. But why not, preferably, by their delegates in convention assembled? Other subjects, discussed at the state meetings, were as follows: Prescription Pricing and Profits; Anti-narcotic Laws; Side Lines; Local Journals, very interesting; More Manufacturing by Retailers; Value of a Drug Store Laboratory; Legal Status of Alcohol; The Drug Market; Growing Drug Plants; Dispensing by Physicians; Food and Drugs Laws; Sunday Closing; "Peyote" Narcotic; What is "Peyote," anyway? Shorter hours, we all want them. I sometimes think how interesting the meetings of the A. Ph. A. would be if it had programs something like the larger state associations.

I am done, yes, I am really baked and served. I am ashamed to have taken up so much of your time in advocating a movement, the desirability of which is so patent that it seems to bring it about it needs only to be mentioned.



H. P. HYNSON
Retiring Chairman, House of Delegates, A. Ph. A.

FRANK H. FREERICKS
Retiring Chairman, Section on Education and Legislation, A. Ph. A.

SCIENTIFIC SECTION, AMERICAN PHARMACEUTICAL ASSOCIATION

VEGETABLE TAXONOMY.*

BY OTTO A. WALL, PH.G., M.D.[1]

The germs of botanical science are found in a rudimentary form in very remote antiquity. The beginning of a science may be considered to be that time when the subject to which it relates first engaged the thought and incited the investigations in regard to the particular natural phenomena by early mankind.

The actual achievements are not of material consideration in this connection; the fact that a subject became an object of study and speculation at a certain period constitutes the "germ" or "beginning" of the science, regardless of the question whether these early theories stood the test of time and were found correct, or whether they were afterwards abandoned because they were proved to be incorrect.

It can only be in this sense that it can be said truthfully that the germs of botanical science are traceable in remote antiquity.

Figuier, in *Vegetable World,* says that the ancients already held the view that plants were sexual, and says this as if such ancient assumption was based on more or less scientific foundation. It is therefore of interest to examine the ancient views on sex, and this will show that Figuier's assertion is erroneous and that the idea that the ancients *knew* plants to be sexual rests on very slim premises.

Primitive man probably at a very early period commenced to speculate on the origin or source of life. It is not inconceivable that the troglodytes living in their caves, depending for food on the hunt and chase, slaying wild animals in self-defence, others for game, robbing birds' nests for food, and using all animal products, even including the slain of their own kind, as provender, came across some eggs just as they were hatching, and generalizing from such observations, the egg became to them an early and primitive conception of the source of life and creation; and the "Cosmic Egg" became a feature of many mythologies and cosmogonies. From this egg originated our universe and all that it contains, including our earth, our gods, and men.

Appuleius, an ancient writer, "saw in the egg the symbol of all that was, that is, and that is possible to be"—and modern biology teaches that the ovum or egg is the highest manifestation of life, to which all other phenomena of life are subservient and contributory.

To civilized man only man seems personal—a real conscious *Ego*—"*Cogito, ergo sum!*" But savages, primitive men, conceive every object as being personal, endowed with passions and attributes like themselves; even the most abstract phenomena were regarded as persons—sky, earth, wind, fire, etc.

In the dim ages, before Linnæus, Berzelius, Cuvier and others had classified living beings and inanimate objects, the distinctions between animal, vegetable and inorganic objects were unknown. There were many transitional forms between animals and plants, on the one hand, while the fossils and petrifactions

* Read before Scientific Section, A. Ph. A., Atlantic City meeting.

[1] Professor of Botany and Materia Medica in St. Louis College of Pharmacy.

furnished equally transitional forms between animals, vegetables and minerals on the other hand.

No ideas of sex were associated with the Cosmic Egg of the ancient cosmogonies. Brahma, who produced it according to the Brahminic traditions, was male; so was the Egyptian god Seb who produced it. The ovum was not recognized as a feminine characteristic. But mankind in its childhood imagined all things to be alive, and to have sex like mankind itself. All religions are based on sex; some, like the ancient Egyptian, Greek or Roman, or the Brahminic worship of Siva, very coarsely so; others, like the Christian, more obscurely so. But sex was the greatest mystery of the ancients, and also the readiest explanation for reproduction and life of any kind, and so all things, animate and inanimate, were supposed to be sexual and to produce either their own kind, or any other kind of being, by processes analogous to those by which human offspring was produced.

Even the soil and stones were supposed to be able to produce human beings, and the ancient Greeks called men who sprang from their soil "autochthones." Even our negroes, who still cultivate many features of voodoo worship, consider lodestones to be powerful fetiches or love-charms, and know how to distinguish between the "male" and "female" lodestones.

With such ideas prevailing, it was but natural that all living things, animal or vegetable, were considered to be related to each other, and that they all, like humankind, were male and female. And animals and plants came to be regarded as the ancestors of the human race, or at least of certain tribes or people. This is *totemism*.

While totemism generally considers man as descended from and therefore related to certain animals (totems), there are tribes who claim to be descended from and related to certain plants. Such tribes could not kill any animal for food or use any plant that was "totem" to them; such animal or plant was tapu (taboo) to them.

Among the Red Maize Clan of Omahas (N. A. Indians) the red maize was considered to be their totem or ancestor, and members of this tribe may not eat red maize.

Among the ancient Norsemen, Ygdrasil was the tree of life from which all living beings sprang. It reached with its roots to all parts of the earth, and produced all the inhabitants of the earth; its roots reached to the lowest depths of the under-world and produced the demons and evil spirits; and its branches reached up into the air, and produced all the creatures that live in the air, and its uppermost branches reached into heaven and produced the gods, thus binding all life into one relationship.

Ygdrasil was an ash-tree (*Fraxinus*) and was the ancestor (or the male ancestor) of mankind. "Fru Eller" (*Alder, Alnus*), according to Norse mythology, was the female progenitress, or ancestress, of mankind. Such and similar was the origin of the ancient belief that plants had sexual attributes. We will consider a few more of these ancient (and modern uncivilized) notions in regard to sex.

The Persians imagined the first tree and the first bull to have been the first ancestors of the human race; as the bull was their symbol of the male creator, the tree must have been their first female ancestress. They discovered, in physics generally, two antagonistic, or rather complementary, principles, one male, the other female.

Heaven and Earth (the deities Uranus and Gea) were at first united or hermaphrodite in many mythologies, under various names, but were afterwards

severed. Uranus (sky), overspreading Gea (earth), was supposed to be male and to be covering Gea in one unending sexual embrace.

In Maori mythology some of the gods were vegetable, some animal in nature. So also in Hindoo mythology.

Those of the people of Ambon who are descendants from trees may not use their totem trees for firewood.

An Ormon clan whose totem is the Kuj-rar tree will not eat of the oil obtained from that tree, nor even sit in its shade.

The *Eddas* say that the first man came from an ash-tree; the first woman from an alder-tree (the ash-tree a variety of *Fraxinus;* the alder-tree, *Alnus incana*, "Erle").

In making fire by friction a hole was made in a block of alder (yonic) and the stick which was twirled in this hole was of ash (phallic), the two by friction producing fire (heat and life).

The ancient Teutons considered the oak-tree male, because the acorn looks like a *glans penis* with its prepuce (acorn in its cupule).

A modern example of this method of grouping plants into male and female prevails in some rural districts of England, with regard to the holly (*Ilex aquifolium*). This plant is dicœcious and the British Encyclopædia says that it changes sex from male to female with age.

The common people, however, distinguish two varieties of the plant: one variety which is prickly and rough and is called "he holly," the other variety, which is smooth or non-prickly, is "she holly," in analogy to the human body, which in the male is bearded and hairy on the body, while the female body is smooth and devoid of hair.

In some parts of Europe children are said to be found in lakes, from which they are brought by storks. In other parts they are said to grow on trees, or to be found in hollow trees.

The birch-tree (*Betula alba*) is considered to be feminine in Bavaria, and children are said to come from birch-trees, or to be found in hollow birch-trees. A newly-born girl-baby is bathed in a tub made of birch-wood so that when she grows up she will be attractive to the men.

The beech (*Fagus*) is considered also to be female, and in some provinces it is regarded in the same manner as the birch.

The *Lupercalia* were old Roman festivals on which occasions women ran about naked so that they could be whipped on their bare posteriors, to make them fertile. This festival survives in some primitive communities of continental Europe. Children are whipped with birch-switches ("Lebens-ruthen," life-switches), otherwise they will not thrive or grow, but remain stunted.

In many parts of Europe female domestic animals as well as the women of the household are whipped on the bare genitals with birch-switches on Halloween eve by the men of the household; this is supposed to insure fertility and healthy offspring.

In parts of Russia the husbands whip their wives on the bare posteriors with birch twigs to make them fertile and to insure easy and safe child-birth. A woman whose husband does not whip her thinks he does not love her. The trousseau of the bride contains the necessary bundle of birch rods or switches ("Ruthe"; also in German the name of the male virile organ).

In Poland, for the same reason, the bride is driven to the nuptial bed by the matrons with a rod of *fir*, which is there considered in the same way as the birch is elsewhere.

In Japan the fir is a symbol of the masculine; the plum-tree, of the feminine. At weddings dwarf trees of these two kinds are used as table decorations.

In India, when a Hindu plants a grove of mango trees, he will not take the fruit of the grove before the trees have been married (with full Brahminic rites and ritual) to some other kind of tree, usually a tamarind, sometimes an acacia. It is considered a disgrace if the mango trees commence to bear fruit before this marriage has been celebrated.

In the Punjab a Hindu cannot legally be married to a third woman; he gets around the difficulty by marrying a " babul " tree, so that the wife he subsequently marries is counted as his fourth.

In Bengal both bride and bridegroom are married to trees before they are married to each other.

Kipling wrote: " Lalun is a member of the most ancient profession in the world. In the West people say rude things about Lalun's profession and distribute lectures to young people in order that morality may be preserved. . . . Lalun's real husband, for even ladies of Lalun's profession in the East must have husbands, was a great big jujube-tree . . . for that is the custom of the land. The advantages of having a jujube-tree for a husband are obvious: you cannot hurt his feelings, he looks imposing, and he does not become jealous."

In Germany formerly, when a child was baptized, a " birth-tree " was planted; a male tree for a boy and a female tree for a girl; this was also done for one of President Wilson's grand-children.

According to Albertus Magnus (about 1250 A.D.), the trees used for this ceremonial were the pear-tree, which was masculine, and the apple-tree, which was feminine. The health and growth of the children were supposed to depend on the manner in which the tree thrived.

Among the ancient Greeks and Romans all trees that bore fruit were considered female; grammatically they were considered feminine, even if the names had masculine endings; the adjectives were feminine. In our scientific nomenclature we have retained this grammatical gender (or sex). *Prunus,* i. f., II Decl., plum-tree; as *Prunus domestica,* adj. fem. *Amygdalus,* i. f., II Decl., almond-tree; as *Amygdalus communis,* var. *amara,* adj. fem. *Quercus,* us, fem. IV Decl., oak-tree; as *Quercus infectoria,* adj. fem.

This applies also to many smaller plants, although not as regularly so: *Avena sativa,* fem.; *Oryza sativa,* fem.

But enough for the present of plant folk-lore; it shows that no element of a scientific nature entered into the widespread ancient belief that plants were sexual in their natures.

Of course, sex was more distinctly apparent in animals and mankind, but even here, the ideas as to the sexual process were vague and wholly unscientific. In fact, the earliest references, in the oldest mythologies, did not always assume two complementary principles or agencies (sometimes spoken of as " antagonistic principles "), but seem to have taught that the Creator was of hermaphrodite nature. I have already stated that in early cosmogonies the Cosmic Egg was not associated with a feminine or not even with any sexual agency.

In New Zealand, Chinese, Vedic, Indian and Greek myths Heaven (sky) and Earth constituted a hermaphrodite being; their union was perpetual. Only later on were they considered as a pair, or as unisexual and dual.

The *Purana,* a sacred Brahminic book, says: " The Supreme Spirit, in the act of creation, became twofold; the right side was male, the left was Prakriti. She is Maia, eternal and imperishable." Again: " The Divine Cause of Creation

experienced no bliss, being isolated—alone. He ardently desired a companion: and immediately the desire was gratified. He caused his body to divide and became male and female. They united and human beings were thus made."

In imitation of this ancient theory that the Creator was androgynous or hermaphrodite some philosophers held the same view with regard to Jehovah (or Elohim), the god of the Bible. We read in the twenty-seventh verse of the first chapter of Genesis: "So God created man *in his own image; male and female created he them.*" And this is emphasized by repetition in the more explicit statement in verses 1 and 2, Gen., ch. v: "In the day that God created man, in the likeness of God made he them; and God blessed them, and *called their name Adam.*"

The Talmud (Hebrew Traditions) says that Adam was created androgynous. His head reached the clouds. God caused a sleep to fall on him, and took something away from all his members, and these parts he fashioned into ordinary men and women, and scattered them through the world.

After Lilith, Adam's first wife, mother of demons and giants, deserted him, God separated Adam into his two sexual parts; he took one of Adam's ribs and made Eve from it.

Philo, a Jewish philosopher contemporaneous with Jesus, said that Adam was a double, androgynous or hermaphrodite being "in the likeness of God." Philo said that "God separated Adam into his two sexual component parts, one male, the other female—Eve—taken from his side. The longing for reunion, which love inspired in the divided halves of the originally dual being, is the source of the sexual pleasure, which is the beginning of all transgressions."

Plato, a Greek philosopher, explained the amatory instincts and inclinations of men and women by the assertion that human beings were at first androgynous: Zeus separated them into unisexual halves, and they seek to become reunited.

The Aryans of India account for the appearance of the different animals in this way: "Purusha was alone in the world. He differentiated himself into two beings, man and wife. The wife regarded union with him as incest and fled, assuming the shapes of various animals. The husband pursued, taking the same shapes, and thus produced the various species of animals."

We read in Genesis (ch. ii, v. 7), "And the Lord formed man of the dust of the ground and breathed into his nostrils the breath of life; and man became a living soul." And Job said (xxxiii, 4), "The spirit of God hath made me and the breath of the Almighty hath given me life."

The "breath of God" was recognized as the vivifying, life-giving, fertilizing essence of the Creator, not only by the early Jewish religion, but also by other religions of antiquity.

Many ancient authors believed in the "out-breathing" (halitus) of the male being the fecundating agent that produced life. In medieval times it was held that Mary was made pregnant by the "word of God" (a very slight modification of the "breath of God") because the Bible tells us that "the word became flesh."

Pythagoras (500 B.C.) taught that "seed is an immaterial ether or vapor, similar to thought, produced by the male." And even as late as A.D. 1600, Caesalpinus, an Italian scientist, referred to a "*halitus*" or breath (an immaterial emanation, exhalation or vapor—practically the perfume) from the male plants as causing fertility in the female plants. But a material substance, or "seed," was substituted for the "breath" at a very early age.

Anaxagoras (a Greek philosopher, about 500 B.C.) taught that the embryo was formed entirely from the "seed" of the father and that the mother merely

furnished the soil in which it grew and developed. But this theory was not new. Anaxagoras merely gave it more definite expression, and made it generally known and popular among the Greeks and the successors to Greek science. The earliest traces of this theory are found in the religious writings of archaic times. For more than a thousand years the sacred compositions of the Hebrews and the Hindus (the Old Testament and the Rig-Vedas) were transmitted orally in Southwestern Asia, and from the resulting folk-lore were obtained the contents of the Bible and the Rig-Vedas when these "books" were reduced to writings, and in both of these sacred books we find this theory, which was taught by Aristotle and Diogenes of Apollonia, but which is most generally ascribed to Anaxagoras, plainly stated.

In the ancient marriage ceremony of the Hindus, when the bride enters her husband's home, those present say: "As a fallow field thy wife enters; sow in her, O man, thy seed!"

And in the Bible we read (Gen. xxx, 11, about 1732 B.C.), "God said unto Jacob, Israel shall be thy name. . . . *Kings shall come out of thy loins*" ("loins" in this connection being a euphemistic translation of the Hebrew word meaning phallus or genitals). And again (Gen. xlvi, v. 26, about 1706 B.C.): "All the souls that came with Jacob into Egypt, *which came out of his loins* . . . were three score and ten."

This passage from the Bible is of considerable interest in connection with the theory of the "preformationists," who held not only that the fully formed although microscopically minute organism existed preformed in the seed of the father, but that it contained or included in itself (like a nest of pill-boxes one within the other) all subsequent generations of germs as well.

This view seems to be implied in the statement just quoted from Genesis, that the children and the children's children "came out of the loins" of Jacob. Again (about 1004 B.C.), the Lord said unto David: "Nevertheless thou shalt not build the house (the temple) but *thy son that shall come forth out of thy loins,* he shall build the house unto my name" (I Kings, ix, 19). The Bible therefore teaches this theory. As late as A.D. 64, this theory had Biblical sanction, for St. Paul referred to a time before Levi was born in this wise: "*For he was yet in the loins of his father* Jacob" (Hebr. vii, 5).

And such was the authority of the Bible that this view persisted until quite modern times. Charles Bonnet taught that before fecundation the germ is pre-existent, and that it contains in miniature all the organs of the adult. His book, "*Contemplation de la Nature,*" containing these teachings was published in 1764–1765. Bonnet died in 1793.

Leeuwenhoek, in 1677, made known his discovery of the spermatozoa. Dr. Dalen Patius soon afterwards claimed to have seen the human form in the spermatozoön, "the two naked thighs, the legs, the breast, both arms, etc."

In France, in 1694, Hartsoecker published that "each spermatozoön conceals beneath its tender and delicate skin a complete male or female animal. The egg (of the woman) is merely the source of nourishment for the real germ contained in the spermatozoön. Each one of the male animals (spermatozoa) encloses an infinity of other animals, both male and female, which are correspondingly small, and those male animals enclose yet other males and females of the same species, and so forth in a series which are to be produced up to the end of time." And the scientists of those days seriously calculated when the supply of germs which Adam had deposited in Eve, and through her in mankind, would become exhausted, and how many human beings were preformed in the beginning and came "from the loins" of Adam. Buffon, the celebrated scientist, and the friend of Bonnet, held similar views.

So it appears that this view of the male furnishing the " seed " was predominant from about 1732 B.C. to the beginning of the nineteenth century, or, if we include the centuries of the oral transmission of the Bible, for about 4000 years.

Some ancient views:

Pythagoras, 500 B.C.—" Semen is an immaterial substance, like thought, produced by the male."

Alkmaeon.—" Both sexes gave seed; who gave most determined the sex of the offspring."

Anaxagoras, 500–426 B.C.—" The embryo is from the male only; a drop from the brain."

Democritus, 470–369 B.C.—" Seed is produced from all parts of the man's body."

Aristotle, 384–322 B.C.—" Seed is produced only by the male; it causes coagulation of the menstrual blood and this coagulum forms the embryo."

Diogenes of Appollonia.—" The embryo is formed from the seed of the male."

Then there was a long list of authors, generally referred to as " post-Pythagorean " philosophers, Thessalus, Drakon, Polybius, Dioxippus, Diokles, and others, who believed in accord with many ancient phallic religions that the male " seeds " were formed in the right testicle (on) and the female " seeds " were formed in the left testicle (hoa); they believed the sex of the offspring could be controlled by tying a string around one of the testicles during coition. A string tied around the right testicle prevented the male seeds from escaping, so that a seed from the left testicle would produce a girl child; and *vice versa,* by tying a string around the left testicle and allowing only seed from the right testicle to be emitted, a boy must necessarily be the result. Galen (130–200 A.D.) also taught this theory. Mohammed considered the seed to be merely fluid; in the Koran, Sura xcvi, he said: " Read, in the name of the Lord who created man from a drop! "

In Cruden's Concordance of the Bible, the first edition of which was published in 1737, but the edition which I have, and from which I quote, printed in 1829, we find the following definition of seed: " Seed—that thin, hot and spirituous humour in man's body which is fitted by nature for the generation of mankind (Gen. 38,9). Likewise for that matter which in all plants and fruits is disposed for the propagation of the kind."

The oldest mention of botanical lore was found in Assyrian and Egyptian inscriptions. In a tomb at Thebes a wall-painting was found which represents a botanical garden, and this is the earliest mention of the cultivation of exotic plants. A contemporary record on a temple wall at Thebes states that an expedition was sent by Queen Hasop (about 1600 B.C.) to bring incense trees from Punt (modern Somaliland) to be planted in the gardens connected with the temple for the purpose of cultivating incense for the temple ceremonials.

An early attempt at botanical illustration is a Babylonian sculpture (about 680 B. C.) showing Ashurbanipal's queen at a meal; among the plants in the background are a date palm and a grapevine, both of which are quite characteristically depicted.

In Sardanapal's library (650 B.C.) were figured plants and plant parts used in medicine, which were stated to be copied from inscriptions going back to between 4000 and 5000 B.C.

The promoters of botany among the ancient Greeks and Romans were not, properly speaking, botanists, but *rhizotomæ* or *pharmacopolæ,* gatherers of medicinal roots and herbs. Aristotle, Mithridates, Cato, Virgil, Dioscorides and the elder Pliny, however, all wrote on botany or the wonders of vegetation. The most learned and important works on this subject were the works of Theophrastus

(fourth century B.C.). He mentions sexuality of plants, but did not determine any special sexual organs.

Of course it may have been empirically noted at a quite early time that some plants never bore fruit, while others of the same kind did produce fruit. The ancients considered fruit-bearing plants as female by analogy with mankind or themselves; the plants that did not produce fruit were therefore male. Some diœcious plants, like hemp, were of this kind; so were date palms; and this empirical observation led the ancients to speak of male and female plants without their having any real scientific understanding of the facts.

The works of Theophrastus remained the most important works on botany until comparatively recent times, in fact, until the times of Linnæus and his contemporaries.

Herodotus, who wrote about 450 years B.C., recorded that the female date-trees had to be fertilized by shaking among their flower-clusters the flower-clusters from the male trees. This procedure, as just explained, must have been due to empirical experience and not to scientific understanding, and the fertilizing power was even ascribed to the multitude of small gnats that were shaken out of the male clusters of flowers.

Alpini, a physician and botanist who lived 1553–1617, wrote: "The female date-palms do not bear fruits unless the branches of the male and female plants are mixed together; or, as is more generally done, unless the dust found in the male sheath or male flower is sprinkled over the female flowers." There does not appear any reason to place Alpini's opinion on other than purely empiric experience.

When alchemists realized the futility or absurdity of their search for the "philosopher's stone" which was to transmute baser metals to gold, or for the "elixir of life" which would cure all diseases and prolong life indefinitely, they turned their attention to the solving of the mystery of generation; the mystery of Adam and Eve, the "red man" and the white woman of Genesis in the Bible.

Caesalpinus (1519–1603), a learned Italian scientist, published a work entitled *De Plantis Libri xvi*, in 1583. In this work the author suggested a classification of plants which more or less distinctly foreshadowed both the Linnæan system and the Natural system of Jussieu and which he based on characteristics of flowers, stamens, pistils and fruits. In this work he recognized that plants were sexual, but he speaks of the "halitus" (breath, exhalation, perfume?) as the fertilizing agent. His views on the anthers and pistils, however, do not seem to have become generally known nor generally accepted.

In the year 1682 Nehemiah Grew, secretary of the Society of London, published his *Anatomy of Plants*, in which the nature of the stamens and pistils as the male and female organs of plants was distinctly asserted.

In 1694 Camerarius, a German botanist, also described the stamens as male organs and the pistils as female organs, in a book entitled *De Sexu Plantarum*.

In 1684 the French botanist Tournefort published his *Elements of Botany*, being the first attempt to define the exact limits of genera in vegetables. Most of his genera are still recognized in modern classifications. The great mistake of his classification, however, was his division of all plants into two classes, "Trees and Herbs"; the great merit, on the other hand, was the importance given to the study of the flower.

His scheme in outline is as follows:

Flower-bearing trees:

- Apetalous
  - Apetalous, properly so called
  - Amentaceæ, having catkins
- Petalous
  - Monopetalous
  - Polypetalous
    - Regular, Rosaceæ
    - Irregular, Papilionaceæ

Herbaceous plants without corolla:

1. Plants provided with stamens (wheat, barley, rice, etc.).
2. Flowerless plants with seeds (ferns, lichens, etc.).
3. Plants in which flowers and fruits are not apparent.

Simple-flowering herbaceous plants:

- Corolla monopetalous
  - Regular
  - Irregular
- Corolla polypetalous
  - Regular
  - Irregular

Compound flowering herbaceous plants:

Compositæ.

While Caesalpinus, Grew and Camerarius had promulgated the idea that plants possessed sexual parts, Tournefort remained sceptical and did not accept such views. However, his system of classification was so superior to previous systems that it brought order where confusion had previously existed, and modern scientific botany practically originated with Tournefort.

John Ray, an English botanist, published his *Historia Plantarum* in 1686; in this work he laid the foundations for modern natural systems of classification.

The main plan of Ray's system is as follows:

- Plants
  - Flowerless plants
  - Flowering plants
    - Monocotyledonous
    - Dicotyledonous

Divided into woody trees and herbaceous plants.

Further subdivisions based on the fruits.

In 1735 Linnæus presented the theory that stamens were male organs and pistils female organs of plants with such convincing emphasis that he compelled universal acceptance of this view. So little known, apparently, were the previously published views of Caesalpinus, Grew and Camerarius, that Linnæus is generally considered to have been the first one to explain the nature of stamens and pistils and to firmly establish the fact that plants have sex. He rendered the theory popular by basing on it his system of classification, which is even to this day used in the schools in some European lands. While modifications of Ray's system constitute the Natural systems of modern times, the Linnæan system still forms an artificial key to the Natural systems, and the terms of this system are generally used in the description of plants and flowers.

That this demonstration of the sexual nature of plants was novel is seen from the interest, even enthusiasm, with which it was received. Erasmus Darwin, the grandfather of Charles Darwin, published a poem, "The Loves of the Flowers," which was illustrated with a series of fine steel engravings; and the rapid acceptance of the Linnæan system everywhere is generally known.

In 1789 Laurent de Jussieu published his *Genera Plantarum,* which is the basis of all modern natural systems of classification; we thus bring down the history of taxonomy to our own times.

During the last 75 or 100 years many botanists have attempted various systems of classification based on the consideration of the cotyledons; of polypetalous, monopetalous and apetalous flowers; upon the mode of insertion of the stamens; names have changed, things remain the same; and if in their details the series of families or orders present certain differences it only arises from the fact that a linear series is incompatible with the natural system, and that the connection of the intermediate groups may be expressed in various ways without affecting the general principles of the system.

While Linnæus established the main facts of the nature of the sexual organs in plants, the exact method of fertilization remained as obscure as that in the case of animals. The pollen was recognized as the matter which fecundated the ovary, but it remained a question as to the manner in which it did so.

It was at first thought that the grains of pollen broke on the stigmas and that the granules were absorbed by the stigma and went to form the embryo. In 1823 Amici, an Italian botanist, discovered the pollen-tubes. About 1837 Schleiden and Hoeckel announced that the vegetable embryo preëxisted as a germ within the pollen grains; it is carried at the end of the pollen-tube to the embryonic sac, where it develops into the seed or embryo.

Whether this was a *conscious* effort to harmonize the fertilization of plants with the views held so long in regard to animals and man, views that were apparently in harmony with the teachings of the Bible, that the seed or embryo issued from the sexual parts of the male, or father, I cannot say; that it was such there can be no doubt.

Schleiden's theory of the preëxistence of the embryo in the pollen grains was shown to be wrong by the observations of Brongniart, Amici, Mohl, Unger, Hoffmeister, and others.

In 1849 Tulasne published his studies on vegetable embryogeny and finally established the theory of fertilization as taught to-day, namely, that the male and female elements unite to form the embryo.

About 1876 the nuclear theory of fertilization was demonstrated. The successive steps in karyokinesis and the importance of chromosomes were demonstrated.

This does not mean that all the secrets of the process are clear; hundreds of men of science are still trying to solve further mysteries of heredity, etc., but these mysteries, while constituting the most fertile field for research and investigation, do not particularly interest us now in connection with this attempt to fix the niche which is filled by Linnæus in connection with the development of Vegetable Taxonomy.

PHYSICAL PHENOMENA PERTAINING TO SOLUTION AND CRYSTALLIZATION.*

BY H. J. NOVACK, M.D.

INTRODUCTION.

Molecules, Atoms, Electrons, Ethereal Corpuscles.

Research in physics and chemistry has, within recent years, wrought many changes in the fundamental theories of the constitution of matter.

Sir J. J. Thomson finds in the atom particles only one seventeen-hundredth of the mass of the atom of hydrogen—the lightest element known.

Sir William Ramsay seems to have demonstrated the transmutation of metals by producing lithium from copper.

Prof. J. N. Collie and Mr. H. Patterson, at the February, 1913, meeting of the Chemical Society in London, gave results of a series of experiments with electric charges, which indicated that synthesis of the atom had been accomplished.

The electric theory of matter with its ions and electrons does not influence the existence of the old atom, which has its position in science as a definite unit in the subdivision of matter, and is still the smallest unit of matter that enters into the ordinary chemical combination.

Admitting the electron as a subdivision of the atom, modern physicists have gone still further and tend to consider the electron as a deformation or modification of the universal Ether.

The Ether particle or corpuscle, theoretically, now holds the position of being the ultimate subdivision of matter, though its nature is still imperfectly understood.

In defining the undulatory theory of light, the Ether is assumed as a perfectly elastic medium of inconceivable tenuity, filling all space and the interspaces of all material objects. It is susceptible of being thrown into the vibrations constituting light by impulses incessantly emanating from all luminous objects.

This elastic tenuous medium must be conceived as filling all space and the interspaces of all material objects, which embraces not only the pores, intermolecular and interatomic spaces, but, according to modern theory, the interspaces between the electrons forming the atom.

The question now arises, since light is the result of "impulses incessantly emanating from all luminous objects," what is the subdivision of matter in a luminous object that is capable of impinging upon the Ether in order that a vibratory effect will result? It must be the electron, since the molecule and atom are too gross or too bulky, and admit the passage of the Ether waves through their interspaces.

In burning metallic magnesium, the forcible union of the atoms of oxygen with those of magnesium liberates a large number of electrons, which, impinging upon the Ether, causes its vibration, resulting in the phenomenon of light. The number of electrons liberated and the force with which they strike the Ether determine the volume and intensity of the light; while color is determined by the wave-length, which is directly proportional to the mass of the electron. The smaller the electron the shorter the wave resulting.

---

* Read before Scientific Section, A. Ph. A., Atlantic City meeting, 1916.

A white smoke is visible when metallic magnesium is burned. This smoke is magnesium oxide, not in a molecular state, for as such it is invisible; but, in a coarser form, the result of the grouping together and contraction into a " particle " or " corpuscle " of a large number of molecules. These particles or corpuscles can be seen and approximately counted, when a little of the magnesium oxide smoke is collected upon a glass slide and viewed under the microscope. One grain of magnesium ribbon, after burning, is resolved into five hundred billion individual particles or corpuscles. Every particle is composed of a number of molecules, for example, ten thousand, each of which liberates a number of electrons, say a thousand. The number of electrons given off during the combustion of one grain of metallic magnesium would be equivalent approximately to five billion billion. This great number of electrons is liberated in one second or a fraction of a second, as in a flash. It is highly probable that light is the direct result of an enormous number of electrons being shot off from its source with such force and manner as to attain both the velocity and vibratory character of light.

NOTE.—A possible experiment to determine this would be the burning of a quantity of metallic magnesium, in a specially closed glass apparatus containing a sufficient amount of oxygen for its combustion, so arranged that nothing will enter or escape, except light. If a sufficient amount of magnesium were burned, then, according to the electron-emission theory, a loss of weight must result. Such loss of weight, no matter how trivial, would prove conclusively the nature of light.

SOLUTION.

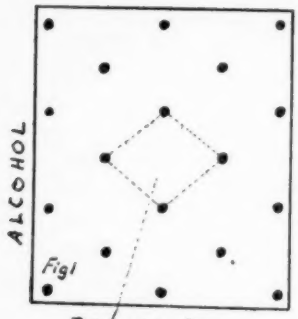
The most peculiar factor of solution is that substances many times heavier than the solvent are held in suspension in defiance of the law of gravitation.

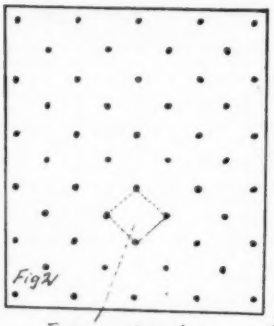
Mendelèeff believed that a solution is a homogeneous liquid system of unstable dissociating compounds of the solvent with the substance dissolved. In a homogeneous liquid like water, the molecules occur in a certain state of, although still mobile, stable equilibrium. When a substance A dissolves in water, its molecules form, with several molecules of water, systems A_nH_2O, which are so unstable that when surrounded by molecules of water they decompose and reform, so that A passes from one mass of molecules of water to another, and the molecules of water which were at this moment in harmonious motion with A in the form of the system A_nH_2O, in the next instant may have already succeeded in getting free. The addition of water or of molecules of A may either only alter the number of free molecules, which in their turn enter into systems A_nH_2O, or they may introduce conditions for the possibility of building up new systems A_mH_2O, where m is greater or less than n. If in the solution the relation of the molecules be the same as in the system A_mH_2O then the addition of fresh molecules of water or of A would be followed by the formation of new molecules A_nH_2O. The relative quantity, stability and composition of these systems or definite compounds will vary in one or another solution."

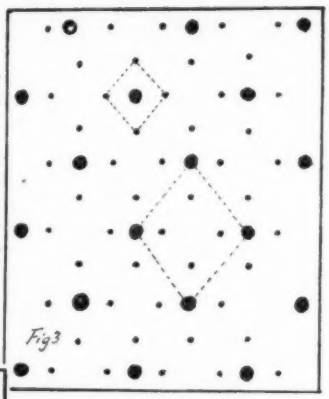
For the conception of the various phenomena and principles involved in solution, one must form a mental picture of the solid, liquid and gaseous states of matter.

In the solid, cohesion is greatest. The molecules are stationary, while the atoms and electrons possess definite motion similar to that of the liquid or gaseous state.

In the liquid, cohesion is moderate, and motion to a certain degree exists between the molecules. The atoms and electrons are as free in motion as in the







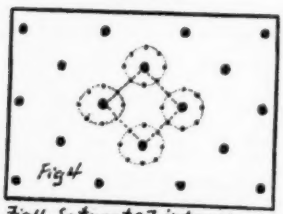
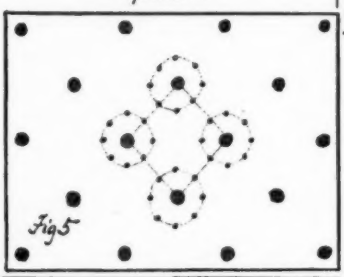


Fig4. Saturated interspace before increasing temperature. — Fig.5. - Saturated interspace after raising temperature.



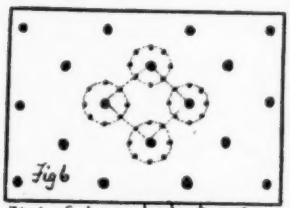
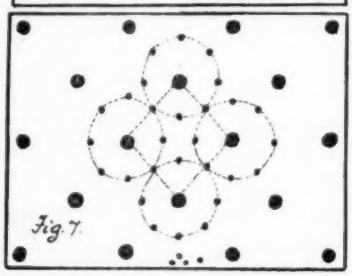
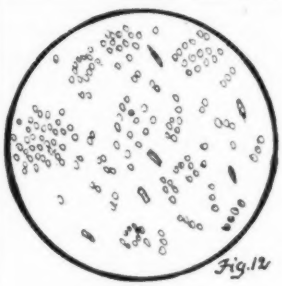
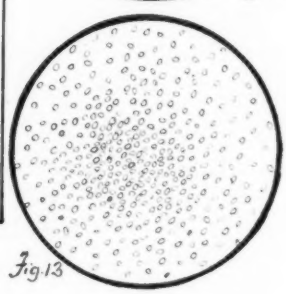
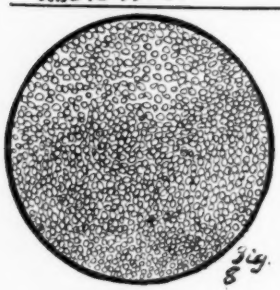


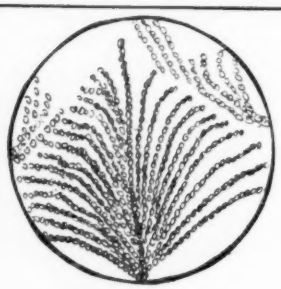
Fig.6.-Saturated at 33°C.
Fig.7.-Same solution heated above 33°C.











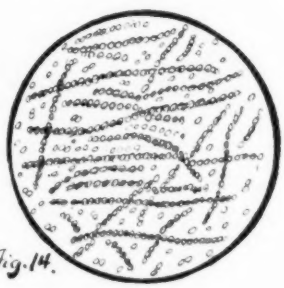


Fig. 11

gaseous or solid state. Density of liquids is dependent not only upon the volume and density of their molecules, but upon the size of their intermolecular spaces.

In the gaseous state, cohesion being absent, the molecules have free motion. The interspaces or distances between the molecules are as variable as the temperature and pressure.

The nature (size and shape) of the intermolecular spaces of a solvent and soluble substance is of utmost importance in determining the properties of the resulting solution, such as its increase or decrease in volume, point of saturation and degree of solubility. When alcohol is dissolved in water, though a solution of decreased density is obtained, the total volume is lessened. (Figs. 1, 2 and 3.)

In dissolving, a solid substance acquires a mobility of parts; that is, the molecules in a solid are at rest, while in a liquid they acquire motion. A gas, on the other hand, loses its elasticity and the motion of its molecules is decreased, due to the friction or resistance offered to its motion by the molecules of the solvent.

A substance distributed in water evidently breaks up, that is, becomes more like a gas, and acquires a greater mobility of parts. This mobility is apparent in the experiment by Gay-Lussac, with reference to diffusion of solutions, which he conducted in the cellars under the Paris Astronomical Observatory. The experiment lasted several months. Notwithstanding the uniformity of the temperature, the substance in solution, in time, ascended into the water and distributed itself uniformly through it, thus proving that there exists between the water and the substance dissolved in it a particular kind of attraction or striving for mutual interpenetration, in opposition to the force of gravity. Further, this effort or rate of diffusion is different for salt or sugar, or various other substances. It follows, therefore, that a peculiar force acts in solution and that solution is determined by a particular kind of motion which is proper to the substance dissolved and the solvent.

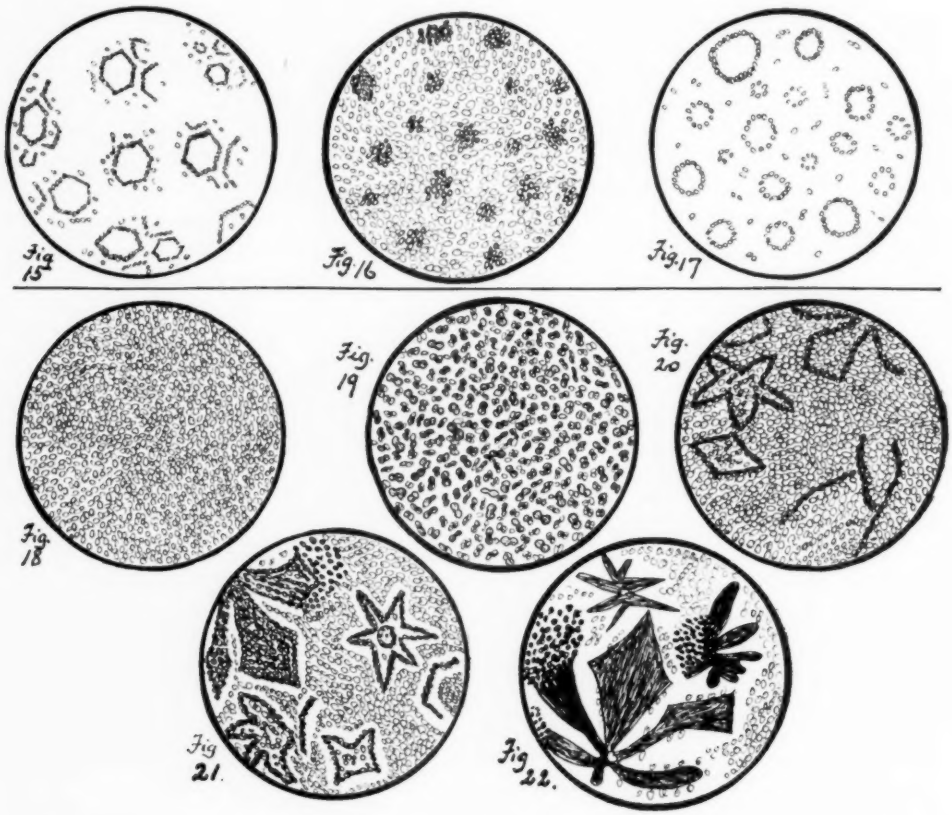
What is the peculiar force acting in solution which causes the ascension of a solid substance of an increased specific gravity, to the top of a solvent of less specific gravity, like salt in water? What is the particular kind of motion?

From many phenomena observed in the microscopic study of solutions and precipitations, it is reasonable to conclude that the molecules of a solution are in a state of constant rapid revolution, attaining sufficient speed to overcome the force of gravitation. For example, a solution may be likened to a number of aeroplanes in the air—the aeroplanes representing the salt molecules and the air the water or solvent. Without motion the aeroplanes could neither rise nor stay in the air. Without motion the molecules could neither rise, as in diffusion, nor stay in solution.

When an excess of a substance is added to a solution saturated by that substance, it will remain in its original state and not diffuse through the water. All the intermolecular spaces in the water of a saturated salt solution are occupied by the salt molecules in a state of motion. By raising the temperature the solubility of a salt increases, first, by imparting additional motion to the molecules so that they are able to stay in solution in groups instead of individual molecules: that is, while at the ordinary temperature single molecules remain in solution by virtue of the rapid motion they attain as a result of their small mass, an increase in temperature imparts such additional motion to the molecules that they are able to exist in solution in groups of two or more, depending upon the increase in temperature. Second, raising the temperature increases the solubility of a salt, inasmuch as the intermolecular spaces of the solvent already holding the salt to

saturation also increase, admitting additional salt molecules. The solubility of sodium chloride varies comparatively little with the increase in temperature, which causes simultaneous increase in the intermolecular spaces of the water, as well as distances between the molecular groups of salt and molecules forming such groups (Figs. 4 and 5). The result is that at saturation the spaces of the solvent are filled, no matter what the temperature may be above the ordinary.

Glauber's salt or sodium sulphate diminishes in solubility after 33° C. This is explained by the fact that up to 33° C. the additional salt molecules are taken up by the molecular groups within the interspaces of the solvent; but after 33° C. the heat causes greater increase in the distances between the salt molecules than



in the interspaces holding them, so that some of the molecules or groups of molecules are precipitated or dropped out (Figs. 6 and 7).

When one salt is in solution and another added, the precipitation of the first may result if its molecules possess weaker motion than those of the salt added. Precipitation will also take place when the motion of the molecules of the two substances in solution is in opposite directions, the one with weaker motion falling to the bottom. For example, a powerful aeroplane in the air, meeting a smaller one, will unbalance and cause its precipitation to the ground.

When a solution of sodium chloride and silver nitrate are mixed, a chemical reaction takes place resulting in the formation of sodium nitrate, which remains in solution, and silver chloride, which is precipitated. The silver chloride is formed by the union of the silver of the silver nitrate and the chlorine of the sodium

chloride, *and exists, for at least a fraction of a second, in a molecular state.* In such a state it would be capable of remaining in solution by its motion, were it not for the attraction or cohesion among the silver chloride molecules being greater than the separative power of the water molecules. It is interesting to note, with the aid of the microscope, the formation of the silver chloride "particles" out of the apparently clear solution. Evidently, a number of silver chloride molecules clump together as a nucleus towards which other silver chloride molecules are attracted, forming a very minute, rapidly-rotating visible speck. This small speck continues to increase in size by attracting around its surface additional molecules, and continues its motion until the particle becomes too heavy to remain suspended in the water, with the result that it falls motionless to the bottom of the glass slide holding the solution. The smaller the speck or particle the greater is its motion. These movements are an attenuated molecular motion similar to that existing in the molecules of any salt in solution. The properties of the actual molecules of a salt in solution are to a certain degree displayed by these particles or groupings of molecules. These phenomena will help to appreciate the cause of the Brownian movement or the motion of colloidal gold particles.

Ammonia dissolved in water evolves heat. This is due to its molecules being toned down from ultra-rapid motion in the gaseous state to that of solution. Heat is evolved as a result of contraction of its molecules, and then again, when already in solution, the rapid motion of the gaseous molecules also generates heat. This is why in the solution of gases in water a heat effect is observed.

This phenomenon is different in the solution of solid substances, because their passage from a solid to a liquid state is accompanied by an absorption of heat. Heat is required and used up in tearing the molecules of the solid asunder and to set them in motion. This causes the cooling effect when a solid is dissolved in water. Then again, when already in solution, the motion of the molecules may attain such great speed that heat will be generated. The definite chemical union of the solvent and substance dissolved evolves heat. Consequently, their sum may either be a cooling effect, as when the motion of the molecules is not sufficient to cause heat evolution while heat is used up in tearing the molecules apart and setting them in motion; or a heating effect is observed when the motion of the molecule is excessive or heat is generated by actual chemical combination.

One hundred and twenty-four grammes of sodium thiosulphate (employed in photography), $Na_2S_2O_3$, $5H_2O$, *melting* at 48° C., absorb 9700 units of heat; but, in dissolving in a large quantity of water at the ordinary temperature, 5700 units of heat are absorbed. In the melting of the salt, it takes 4000 units to heat it to a point where it will melt, *forming a saturated solution.* In a large quantity of water, the 124 grammes of salt take up less heat while dissolving, as it does not form a saturated solution. Then again, the separative action of the water upon the 124 grammes of salt is equivalent to 4000 heat-units, and, therefore, require only 5700 heat units to set the molecules of salt in motion or solution.

In most cases, solid substances in dissolving in water evolve heat, since their molecules, when once set in motion in the water, attain such great speed that heat is generated in excess of what is continually being taken up by the molecules entering the solution state. Thus, calcium chloride ($CaCl_2$), magnesium sulphate (anhydrous) ($MgSO_4$) and many other salts evolve heat in dissolving. For example, 60 grammes of magnesium sulphate evolve 10,000 units of heat in dissolving. Therefore, in the solution of solid bodies, either a cooling or a heating effect is produced.

Mendelèeff believed "that the solution of a solid in water—although it is as with gases, a physical passage into a liquid state—is determined by its chemical affinity for water. This is clearly shown by the fact that in solution there occurs a diminution in volume, a change in the boiling point of the water, in the freezing point, and in many similar properties. If solution were physical and not a chemical phenomenon, it would naturally be accompanied by an increase and not by a diminution of volume. Contraction is the usual phenomenon accompanying solution, just as happens in the combination of substances when evidently new substances are produced."

The probability is that in solution we have a means of appreciating the nature of chemical affinity, since some solutions are close to the physical border, others median, and still others purely chemical. If diminution in volume, change in the boiling and freezing points are indicative of purely chemical phenomena, then, solution is chemical in nature. If, however, we admit that diminution in volume is the result of differences in the position of the molecules of the substance and solvent; that the boiling point is increased correspondingly with the concentration, because the solid or salt dissolved in the water takes up the extra heat to keep the molecules in extra rapid motion or rotation; that the freezing point is lowered, because it requires the extra reduction in temperature to stop the motion of the molecules of the substance dissolved in the water, then, solution is physical in nature; unless we admit these physical phenomena over the chemical borderline. For example, in winter, sea water will remain fluid, while river waters are frozen, because the salt molecules are in a state of motion in between the water molecules, which, at the ordinary freezing temperature, cannot rearrange themselves into the form of ice until the motion of the salt molecules ceases, requiring a lower temperature than 0° C.

"One hundred parts of water at 20° C. dissolve 34 parts of potassium nitrate; but, on the addition of sodium nitrate, the solubility of the potassium nitrate increases to 48 parts in 10 of water (Carnelly and Thomson)." The increase in solubility is due to the desiccation of one salt by the other, that is, the molecules of one get in between the molecules of the other substance, thereby aiding the water in lessening the cohesion of the less soluble salt. Then again, the molecules of a *slightly soluble* salt do not possess sufficient rapidity of motion to permit them to exist in solution in large groups; but, by the addition of a more soluble substance whose molecules must naturally possess greater motion, it is possible for them to act as a nucleus or center around which the molecules of the less soluble substance gather and are in this way held in solution in larger amounts.

Common salt is insoluble in oil, since there is no interpenetration of the salt by the molecules of oil or the oil by the molecules of salt. Therefore, it is the penetration between the molecules of a substance by a solvent, as well as the motion of the molecules of that substance in the solvent, that determines its ultimate solubility.

Solution is dependent upon a definite physical relation between the size and shape of the molecules and intermolecular spaces of the soluble substance and solvent. For example, water loosens very few molecules from iodine crystals, being unable to penetrate the interspaces of the iodine. Upon addition of potassium iodide, the iodine molecules are separated by the interpenetration of the potassium iodide molecules in solution. This is similar in a way to the physics of a colloidal gold solution, the result of an electric current tearing away gold particles. Water alone cannot do this unless aided by electricity, and is partly similar to the potassium iodide acting in solution upon crystals of iodine. Were

the electric current capable of separating the gold into molecules, instead of groups of molecules in the form of particles, there would be formed an actual solution of gold in water and not a colloidal one, which it does form.

As regards their chemical composition, the colloids as a class are very complex—that is, they have a large molecular weight and a large molecular volume—in consequence of which they do not penetrate through membranes, and are easily subject to variations in their physical and chemical properties, owing to their complex structure and polymerism. They have but little chemical energy.

CRYSTALLIZATION.

By cooling a saturated solution or by slow evaporization, crystals of the substances dissolved are in many cases formed. The most remarkable circumstance is, that many solids, in separating out of an aqueous solution, retain a portion of water, forming crystallized solid substances which contain water. As a result of the linking together of the molecules of a crystalline substance, a number of molecules of water are enclosed and called "water of crystallization." Alum, copper sulphate, Glauber's salt, and magnesium sulphate contains such water; but, neither sal ammoniac, table salt, nitre, potassium chlorate, silver nitrate, nor sugar contains any water of crystallization. One and the same substance may separate out from a solution with or without water of crystallization, according to the temperature at which crystals are formed. Thus, common salt in crystallizing from its solution in water at the ordinary or higher temperature contains no water; but, if its separation from the solution takes place at a low temperature, namely, below –5° C., then the crystals contain 38 parts of water in 100. This is because at the ordinary temperature the salt molecules possess too much motion, while at a low temperature the motion of the salt molecules is toned down to a point similar to the motion of the water molecules, both being brought closer together so that crystals contain water of crystallization. Crystals of the same substance which separate out at different temperatures may contain different amounts of water of crystallization.

A supersaturated solution is similar to a saturated or even ordinary solution, except that the molecules of the salt forming the supersaturated solution are closer together or in larger groups. The slightest disturbance, such as the admittance of air or the dropping into the solution of a similar crystal, causes immediate crystallization. Thus, if a vessel holding the supersaturated solution of Glauber's salt be opened and a crystal of Glauber's salt be thrown in, crystallization suddenly takes place. The molecules nearest the crystal rush to attach themselves to its surface, and thus the molecules throughout the entire solution are thrown out of their regular orbits and fall on one another. A considerable rise in temperature is noticed during this rapid separation of crystals, due to the sudden cessation of the motion of the salt molecules and their contraction into crystals. Naturally, when two or more rapidly-rotating molecules suddenly come together so as to stop their motion, heat results.

In the majority of instances, where solid bodies are allowed to separate slowly from their solutions, they are found to assume regular geometrical forms. This tendency is much stronger in some substances than in others and it varies widely in the same substance under different physical conditions.

The regular external form of the crystal is its most striking feature, and the only one that, for a long time, was regarded as essential. But we now know that this form is only an outward expression of a regular internal structure.

The powers that are active in the formation of crystals and their mode of

formation have been favorite subjects of speculation by past writers on crystallography. The microscope has, within recent years, aided in the study of this interesting subject, revealing some highly interesting and important phenomena.

Whenever molecules of a solid abound in a free state, their first manifestation of cohesion usually is in the form of minute microscopic particles, varying in volume and density with the substance forming them. These particles may be termed "primary crystalline molecules or particles," since many crystals can be traced directly to the arrangement and contraction of these particles into forms. The first microscopically visible trace of precipitation is in the form of these particles—which is the result of cohesion between the molecules thrown out of solution. Smoke of any kind is the result of cohesion of the molecules into primary crystalline particles. This particle is so universal that it may be called the "chemical cell."

The following observations will help elucidate the subject under consideration:

Magnesium Oxide.—A fraction of a grain of metallic magnesium is ignited and the smoke or oxide collected on a glass slide.

When viewed under the microscope, a large number of primary crystalline particles are visible. These particles are formed directly from the nascent molecules of the magnesium oxide as the metal burns, by attraction around one or more molecules as a nucleus or center in rapid motion of additional molecules, finally forming the smoke particle. After some time, the particles are gradually drawn closer together, and result in a sort of linear crystallization (Figs. 8 and 9).

Definite crystals never form. When a small drop of water is added to the slide and particles loosened from the surface by means of a needle, very active motion will be noticed. There are approximately five hundred to a thousand billion individual particles formed by the combustion of one grain of magnesium metal. Every particle measures approximately one twenty-thousandth of an inch in diameter.

Cupric Chloride.—A drop of a solution of this substance (4 grains to the ounce) is placed on a slide and viewed under the microscope.

A number of primary crystalline particles possessing active motion are noticed. After they fall to the bottom of the slide, the particles are seen to arrange themselves into forms by "looking for a place." A particle can often be seen to go between two other separate particles and make one out of all by "fusion."

A drop of a solution (¼ grain to the ounce) is placed on a slide and gently evaporated over a Bunsen flame. When the slide is examined, the appearance is like Fig. 10, the particles having a tendency to arrange or crystallize along lines radiating from a single point.

Arsenic Trioxide.—One five-thousandth of a grain on a needle point is heated in a Bunsen flame and the sublimate caught on a glass slide. A drop of water is placed over the sublimate and particles are disturbed by rubbing a needle over them.

The detached particles acquire definite and pronounced motion. Groups of particles also move, due to the impacts by invisible or undeveloped particles, as well as the transference of motion through the water by sympathy. There are approximately two trillion particles to every grain of this substance.

Cuprous Oxide (Red).—Being insoluble, one-fourth of a grain is mixed with one ounce of water.

Particles display very good motion. They seem to attack each other, separate, and return after a moment to repeat attack. Often, after persistent watching of two particular particles in process of attraction and repulsion, they may be seen

to gradually unite into one. Manganese peroxide shows similar phenomena (Fig. 11).

Motion continues for a long time and the activity of the actual molecules imparts motion to any minute foreign body or fully developed particle. No crystals are formed in the water. The most is the union of two or formation of clumps.

Stannous Chloride.—One-fiftieth or one-twentieth of a grain to the ounce of water.

This substance absorbs oxygen from the air and changes to stannic oxide, precipitating as such. So-called life or motion is, therefore, very pronounced from the very faint speck of freshly formed stearic oxide, until it forms a fully developed particle of stannic oxide. It is strongly crystalline—one one-hundredth of a grain to one ounce of water shows crystallization and motion of particles.

Mercuric Iodide.—When mixed with water, motionless clumps are noticed, the substance being insoluble. When a little mercuric iodide on a pin-point is heated in a Bunsen flame and the vapor or sublimate collected on a slide, a good field of primary particles is procured.

The actual molecules actually form the gross molecules as soon as they strike the glass. When a drop of water is added, partial crystallization takes place. By drawing a needle over the field some particles are dislodged from their attachment and display motion for some time (Fig. 12).

Cadmium Chloride.—One-eighth of a grain to the ounce of water renders a good field of individual particles displaying fair motion (Fig. 13). When a little is heated, it volatilizes into the brown oxide, which can be caught on a glass slide. A small drop of water is placed on the sublimate and what may be termed partial crystallization takes place among the primary particles (Fig. 14).

Boric Acid.—A small crystal is heated and the sublimate collected on a cool slide.

The sublimate does not appear evenly over the entire slide when viewed microscopically. Instead, a number of particles, partially-formed crystals and crystals all forming a group are noticed away from another similar group (Fig. 15).

It seems that, crystallization being very strong in the sublimate, crystals form the instant the particles strike the glass surface. The contraction gives the appearance of groups. Hexagons are the prevailing forms in this substance. The particles are often visible in the partially-formed hexagon and are of a light-greenish color.

Calomel.—A small speck of calomel is vaporized and the sublimate collected on a slide. Individual crystalline particles are visible and interspersed are seen darker and larger bodies (Fig. 16), evidently an attempt at partial crystallization upon condensation on the slide. When a small drop of water is added to sublimate and particles loosened by a needle, they display motion.

Gold Chloride.—One-quarter grain to ounce of water.

This substance is one of the best for studying the life or motion of the individual particle. From a faint speck particles are seen to develop, and when heavy enough, sink to the bottom or surface of slide. Two particles may unite while in process of development or motion, or two may unite after falling near each other. The brass of the lens helps precipitate the solution, since no cover slips are used in making observations. Mercury bichloride and silver nitrate give similar phenomena.

Sulphur.—A small particle of sulphur is ignited and the smoke collected on a cool slide. Upon this slide are sulphuric acid—formed by the sulphur dioxide (gas) and sulphur trioxide (gas) with the moisture of the air—and a white deposit

of pure resublimed sulphur. This sulphur deposit is in the form of crystalline particles. The slight moisture due to the little sulphuric acid formed permits the particles to float freely, and they are, therefore, very active. Particles are seen to run here and there and suddenly fuse with each other. The rings or serpent forms appear as if they had a capsule. This is due to the contraction around the outside causing better fusion of the particles.

A drop of water is placed on a slide in a hanging position so as to catch the fumes of the burning sulphur. When viewed under the microscope, a swarming bunch of particles are noticed. Sometimes they float on top of the water arranged in circles, like Fig. 17.

Copper Acetate.—A quarter of a grain is dissolved in an ounce of water. A small drop is placed on a glass slide and very gradually evaporated, at the same time the slide is studied microscopically.

The following five stages can be differentiated:

First, the development of the " primary crystalline particles " or " gross molecules " from the actual molecules of the solution (Fig. 18).

Second, the formation of pairs from the union of two primary particles (Fig. 19).

Third, a faint appearance or tendency towards arrangement in lines and shapes (Fig. 20).

Fourth, closer attraction and definite arrangement, the separate particles still being visible; " semi-fusion " (Fig. 21).

Fifth, complete " fusion," after which all lines of demarcation and traces of the individual particles are obliterated, thus forming a complete crystal (Fig. 22).

As soon as attraction between the particles and arrangement are manifested, a clear area containing fewer or no particles becomes noticeable in the vicinity of the crystal in formation or formed crystal.

CONCLUSION.

The various substances under experimentation, of which the preceding are but a few examples, were all reduced to a common, initial or fundamental form—" primary crystalline particles " or " gross molecules "—from which the development or formation of crystals can visibly be traced.

Most characteristic is the fact that these particles display very decided activity, so that it would be difficult to distinguish them from various living organisms of a low order. They possess the power of attraction and repulsion for each other. A particle already attached to several others may suddenly be seen to tear itself away from its fixed position and dart across a distance, to become attached to another particle or group of particles.

In short, the first visible trace of crystallization is the formation, out of the actual molecules in solution, of a very minute particle, which displays the phenomenon of definite motion, has the power of attraction and repulsion, and continues to increase in size by accumulation while in motion of additional actual molecules, until its mass has become so heavy as to fall to the bottom of the solution, where it combines or attaches itself to other similar particles, forming crystals.

As the atomic arrangement determines the molecule, and the molecular arrangement the " primary crystalline particles," so the arrangement of the " primary crystalline particles " determines the shape or form of the crystalline substance.

DIAGNOSTIC REAGENTS AND THEIR USES IN THE DIAGNOSIS OF INFECTIOUS DISEASES.*

BY F. E. STEWART, PH.G., M.D., PHAR.D.

In my paper read before the Scientific Section of the A. Ph. A., at the San Francisco meeting, August, 1915, entitled "Principles Underlying the Use of Vaccines, Bacterins, Antitoxins and Immune Serums as Agents for the Prevention and Cure of Infectious Diseases," attention was called to the properties of immune serum, that is, serum from an animal immunized against an infective agent.

Immune serum manifests four specific actions assumed to be due to the presence of antibodies, namely: (*a*) antitoxic action; (*b*) bactericidal and lysogenic action; (*c*) opsonic action; (*d*) agglutinating and closely allied precipitating action. The antitoxic action is due to the presence of antitoxin. The bactericidal and lysogenic is assumed to be due to the presence of an antibody to which the name *bacteriolysin* has been applied.[1] The opsonic action is assumed to be due to *opsonins*. The word opsonin is from Greek *opsono*, to prepare food for. The specific opsonin developed in the blood serum during the process of immunization has the property of preparing the bacteria for ingestion and digestion by the *leucocytes*, or white corpuscles of the blood. When a small quantity of immune serum is added to a suspension of the corresponding bacterium, the organism becomes agglutinated into clumps and motility is suspended or destroyed. This action is assumed to be due to the presence of *agglutinins*. Advantage is taken of the phenomena in diagnosing typhoid fever, as will appear later. The immune serum may not only cause agglutination, but, when added to the filtrate of a culture of the corresponding bacterium, may produce a cloudiness and afterwards a precipitate.

Antigen.—An antigen is a protein substance which, introduced into the animal body, stimulates the body cells to produce antibodies. Practically any protein substance may serve as antigen.

Character of Antigens.—There are two views on this subject. Vaughan believes that the various so-called antibodies are merely manifestations of enzyme action. He points out that when any protein substance, either living or dead, is introduced into the animal body the body cells are stimulated to produce proteolytic enzymes, or digestive ferments, which have the power of digesting and destroying the protein substance referred to. When a protein substance is taken into the alimentary canal and digested by the various enzymes prepared by the glands emptying their contents into this canal, the digestion is called *enteral*. When a protein substance is injected into the tissues, the body cells at the point of injection are stimulated to produce specific digestive enzymes; this digestion is known as *parenteral digestion*. Vaughan explains infection and immunity on this basis, as stated in my former article. Certain body cells, having acquired the power of producing enzymes or digestive ferments resulting from an infection, are in position to respond promptly when again stimulated by an attack of an infective agent, and in this way the body acquires immunity of greater or less

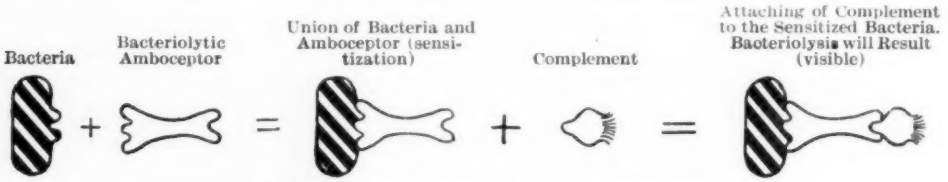
* Read before Scientific Section, A. Ph. A., Atlantic City meeting, 1916.

[1] This action is due to the combined effect of two substances, amboceptor and complement. There is some question as to whether or not the bactericidal amboceptor is identical with the complement-fixing amboceptor concerned in the Wassermann reaction. For the purposes of this paper a final answer is unessential.

degree and duration against subsequent attacks. Immunity following an attack of typhoid fever and other infectious diseases is thus accounted for. It will thus be seen that the terms "antibody" and "enzyme" practically represent the same principles.

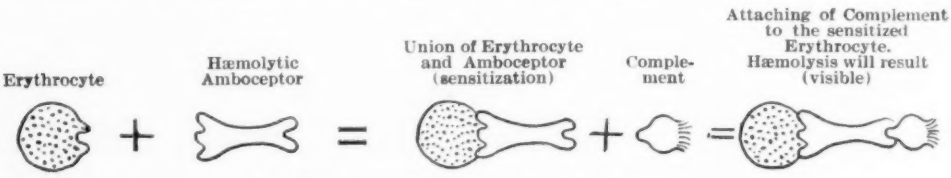
Bacteriolysis.—Bacteriolysis is assumed to be due to the production in the blood of the immunized individual of an antibody to which the name *bacteriolysin* has been given. According to Vaughan, bacteriolysis is due to the digestive action of a proteolytic enzyme produced by the body cells in response to stimulation by the appropriate protein. According to the same authority, all enzymes are made up of two factors, namely: complement and amboceptor. It is the function of the complement to digest the antigen. This it cannot do until the antigen is acted upon or sensitized by the amboceptor. What really occurs as a result of introducing a protein substance into the animal body is the production, not of an enzyme, but of the specific part of an enzyme, namely, the amboceptor. Complement is not specific—it exists normally in the blood of all animals, and is practically the same, no matter from what source derived.

We therefore have in the production of bacteriolysis three factors, namely: the bacterium, the specific amboceptor or antibody, and the complement. When these three factors react, bacteriolysis occurs. (See Fig. 1.) In this reaction the complement is absorbed or fixed by its attachment to the sensitized bacteria.


Bacteria
Bacteriolytic Amboceptor
Union of Bacteria and Amboceptor (sensitization)
Complement
Attaching of Complement to the Sensitized Bacteria. Bacteriolysis will Result (visible)

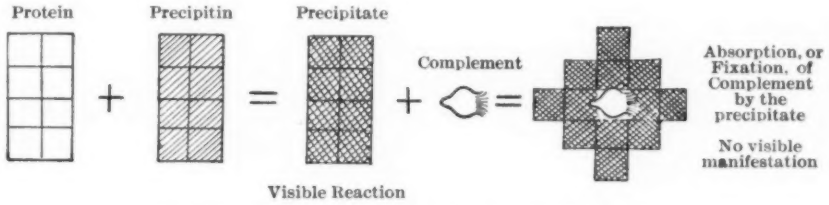
FIXATION OF COMPLEMENT BY BACTERIOLYSIS

Hemolysin.—In a similar manner when an animal, say a rabbit, is immunized against the red corpuscles of the sheep, the blood serum of such an animal possesses lysogenic action for the red corpuscles of the sheep's blood, but does not possess lysogenic action toward the red corpuscles of any other kind of animal's blood. This lysogenic action in the case of red blood corpuscles is known as *hemolysis,* and it is assumed by some that the cause of the hemolysis is due to the presence of another antibody, namely: a peculiar specific principle in the immune serum to which the name *specific hemolysis* has been given. But this specific hemolysin alone will not cause hemolysis. Hemolysis is the result of the action of three factors: *i. e.,* red corpuscles, specific hemolysin and complement. These three react, causing the disintegration or breaking down of the stroma of the red corpuscles, and liberates the hemoglobin into the surrounding fluid, which becomes a clear, red, transparent solution instead of the opaque suspension of red corpuscles. (See Fig. 2.) In this reaction the complement is absorbed or fixed by its attachment to the sensitized erythrocyte.


Erythrocyte
Hæmolytic Amboceptor
Union of Erythrocyte and Amboceptor (sensitization)
Complement
Attaching of Complement to the sensitized Erythrocyte. Hæmolysis will result (visible)

FIXATION OF COMPLEMENT BY HÆMOLYSIS

Precipitin Reaction.—If any unformed protein substance is introduced into the body of an animal, the blood serum of such an animal, when added to a solution of the same protein, will produce a precipitin. This phenomenon is assumed to be due to a specific substance in the serum formed during the process of immunization, to which the name *Precipitin* has been given. Now, if to a mixture of this immune serum and the precipitate referred to, complement is added, no visible manifestation will occur. However, the complement will be fixed by the precipitate. (See Fig. 3.)



FIXATION OF COMPLEMENT BY PRECIPITIN REACTION

Bordet-Gengou Phenomenon.—We are now in a position to consider the Bordet-Gengou phenomenon of complement fixation upon which is based the Wassermann reaction and the several modifications of the same used in the diagnosis of syphilis.

In the above three figures it will be noted that the complement united with the antigen-antibody combination and, therefore, became fixed. This reaction, however, is invisible and means must be had to determine that it has or has not taken place. For this purpose a so-called hemolytic system is employed. Let us consider for a moment that we have placed a suspension of antigen, antibody and complement, for example. Place bacteria, bacteriolytic amboceptor and complement in a test-tube in the incubator. Bacteriolysis occurs during incubation. Now, if we add to the test-tube a hemolytic system (erythrocytes and hemolytic amboceptor), and again incubate, no hemolysis will occur because the complement has been used up in the bacteriolysis which preceded. (See Fig. 4.)

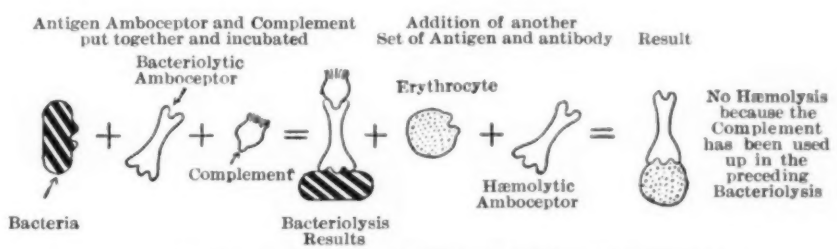


ILLUSTRATION OF PHENOMENA OF BORDET AND GENGOU

If the bacteriolytic amboceptor had been omitted, bacteriolysis would not have occurred during the first incubation. This would have been shown by the hemolysis, which in that case would have followed the second incubation because the complement, which could not have been fixed by the bacteria in the absence of bacteriolytic amboceptor, was free to unite with the erythrocytes and hemolytic amboceptor and break down the red blood cells liberating the hemoglobin (a reaction which is plainly visible).

This phenomenon was discovered by Bordet and Gengou in 1901. It depends

upon the fact that when an antigen is mixed with its inactivated[2] antiserum, in the presence of complement, the complement is fixed by the antigen combination and disappears from the mixture. If such a mixture is allowed to stand at a suitable temperature for an hour or more, and to it is added a suspension of erythrocytes, together with a suitable quantity of inactivated hemolytic amboceptor, hemolysis will not take place, as has already been pointed out, since there is no free complement present to complete the hemolytic system. If, on the other hand, the original mixture contains no antibody for the antigen used, the complement present is not fixed and is available for the activation of the hemolytic serum later added.

The reaction depends upon the fact that neither antigen alone, nor amboceptor (antibody) alone, can fix complement, but that this fixation is accomplished only by the antigen-amboceptor complement. Any specific amboceptor can be determined by this method, provided the homologous or stimulating antigen is used; and, on the other hand, by the use of a known antibody a suggested antigen may be determined.

This indirect method of determining the presence of a specific reaction between antigen and antibody has been extensively applied to various infectious diseases with more or less success. As stated by Kolmer,[3] the complement-fixation methods have their great value, and are probably best known, in the serum diagnosis of syphilis,—the biologic syphilitic reaction of Wassermann, Neisser, Bruch, and Detre.

The Wassermann Reaction.—In their original experiments Wassermann and his collaborators used salt-solution extracts of syphilitic organs. Various modifications have been suggested, and at present the methods of preparing antigens may be divided into seven different classes as follows:

(1) Aqueous extract of syphilitic livers.
(2) Alcoholic extracts of syphilitic liver.
(3) Alcoholic extracts of normal organs.
(4) Alcoholic extracts of normal organs re-enforced with cholesterin.
(5) Acetone-insoluble lipoids.
(6) Lecithin and cholesterin.
(7) Aqueous extracts of pallidum culture.

It is evident from the above that the term "antigen," as originally used in the Wassermann reaction, is a misnomer. The only specific biological antigen is a pure culture of *Treponema pallidum* (*Spirochæta pallidum*).

In performing the test by the original Wassermann system, five different factors are required, *i. e.*: (1) antigen, which in the original test consisted of a salt solution of syphilitic organ, as already stated; (2) the patient's serum; (3) complement (fresh guinea-pig's serum); (4) hemolytic amboceptor, *i. e.*, blood from a rabbit immunized against the red corpuscles of a sheep; (5) red corpuscles from the blood of a sheep. When the syphilitic antigen, suspected serum and complement are incubated together the complement will or will not be fixed, depending upon whether or not the suspected serum contains syphilitic amboceptor. If the serum contains syphilitic amboceptor, it will fix the complement. However, as there is no visible manifestation of this when it occurs, it becomes necessary to have an indicator. This indicator consists of the other two factors, namely: a

[2] Fresh serum heated to from 55° to 56° C. to destroy the complement. This process is called "inactivation," and the heated serum is called "inactivated" serum.

[3] "Infection, Immunity and Specific Therapy," John A. Kolmer, M.D., Ph.D., W. B. Saunders Co., Phila., Publishers, 1915.

suspension of sheep corpuscles and serum from a rabbit previously immunized against sheep corpuscles, and therefore containing hemolytic sheep amboceptor. This is added to the mixture in the test-tube. If, following the addition of this second set of antigen and amboceptor, *i. e.*, red blood corpuscles of the sheep and serum of rabbit immunized against sheep corpuscles, hemolysis (lysis of the sheep corpuscles) occurs, it shows that the complement was free in the mixture in the test-tube, and, therefore, the suspected serum contains no syphilitic amboceptor. If, on the contrary, hemolysis does *not* occur, it is evident that the suspected serum contains syphilitic amboceptor, and that the reaction *did* occur in the test-tube, resulting in the fixing of the complement by the antigen-amboceptor combination. As at present carried out any one of the above-mentioned antigens may be employed in the reaction, the most common probably being No. 5—Acetone-insoluble lipoids—as recommended by Noguchi.

The Noguchi Modification of the Wassermann Reaction.—Among the large number of modifications of the original syphilis reaction that have been devised, that of Noguchi is acknowledged to be of distinct value.

In presenting his modification, Noguchi[4] says that "the chief cause why the original method of Wassermann was so difficult to carry out is because in that system the reagents are so unstable and associated with many other undesirable side actions that these must be used soon after being prepared." He calls attention to the fact that these difficulties are inherent to most of the modifications described.

To overcome these difficulties Noguchi has suggested a method whereby the preparation of the most important and difficult reagents is done by competent laboratory workers in a regular biological laboratory and distributed among those who understand how to use the apparatus. The reagents for making the test are as follows:

Several 1-Cc. pipettes, graduated to 0.1 Cc., are required; also two 10-Cc. pipettes graduated to 0.1 Cc., and several 1-Cc. pipettes graduated to 0.01 Cc. A number of small test-tubes are also required, the best dimensions being 10×1 cm. Two of these tubes are necessary for each test, and four tubes for controls in each series of tests. Of course the total number needed will depend upon the amount of work to be done. In addition to the above apparatus, a number of larger test-tubes, or very small flasks, for mixing the blood suspension, a number of larger flasks or bottles as containers of physiological salt solution are required; also glass tubing, about 4 mm. in bore, for making capillary pipettes. A few test-tube racks with two parallel rows of holes must be provided; also a pair of scissors, a paraffin pencil, centrifuge and incubator. This apparatus must be chemically clean.

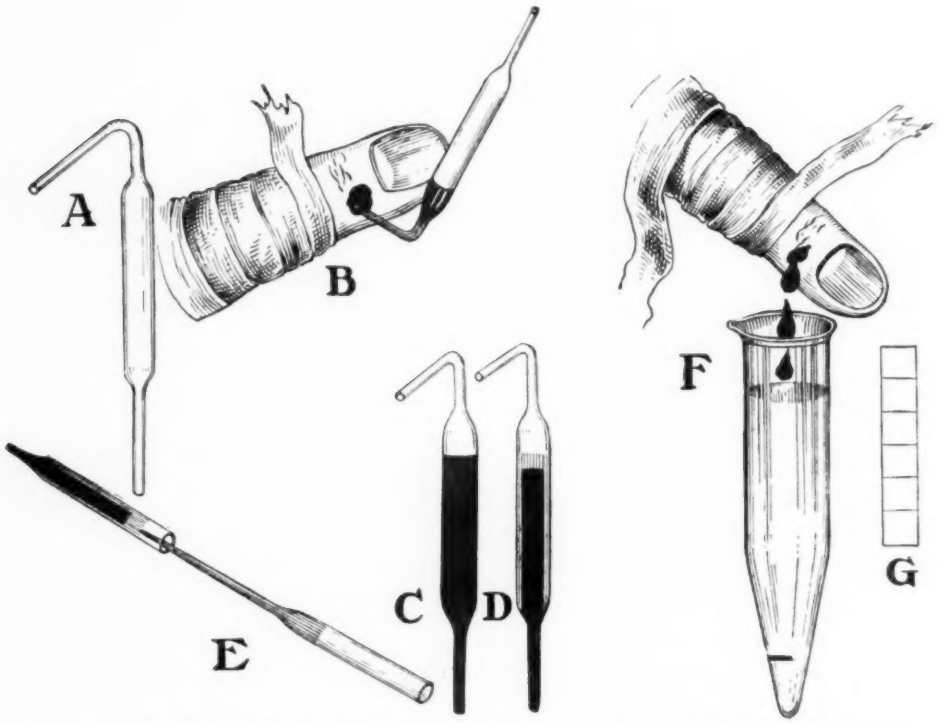
The reagents employed are: (1) patient's serum; (2) serum from individual known to be in health; (3) serum from individual known to be syphilitic; (4) suspension of red corpuscles from the human blood; (5) diluted antigen; (6) complement; (7) amboceptor; (8) physiological salt solution.

The blood required may be obtained by puncturing the finger, or in small children the lobe of the ear should be punctured. The blood will come in drops. When the finger is selected, it should be tightly squeezed in such a manner as to drive the blood to the extremity, or bound with a narrow bandage starting at the proximal end, to accomplish the same object. A prick is then made with a

[4] *Serum Diagnosis of Syphilis and Luetin Reaction*, by Hideyo Noguchi, M.D., M.Sc., associate member of the Rockefeller Institute for Medical Research. Published by J. B. Lippincott Company, Philadelphia (third ed.), 1912.

sterile needle, as illustrated in the cut. For collecting the blood, Wright's capsules are the best suited. The blood is collected by touching the curved end of the needle as it oozes from the puncture. When sufficient blood has been collected the straight, empty capillary end of the capsule is sealed with a flame. When cool, the blood is driven[5] from the bent end of the capsule to the straight end, then the bent end is also sealed with a flame. By this method the capsule can be sealed without heating the blood.

The capsule is then set aside to permit the clotting of the blood, or the process is hastened by centrifugalization.



A represents the capsule for collecting blood from the patient. *B* represents the method of obtaining the patient's blood. *C* represents the blood after it has been shaken down to the straight end of the capsule. The capsule is then set aside to allow the serum to separate, or it may be centrifugalized. *D* represents the clotted blood and the separated serum. *E*, capillary pipettes used to collect serum and drop it into test-tube. *F* illustrates the procedure for obtaining blood for the suspension of human red blood-corpuscles. *G* represents the antihuman amboceptor paper, which may be obtained from the regular biological laboratories.

The suspension of red corpuscles can be prepared with the blood of the patient being examined. The standard amount of the suspension required is 1 Cc. of a one percent, or 0.1 Cc. of a ten-percent for each tube. Thus, if 1 Cc. of blood is taken from the patient, it will supply enough corpuscles to distribute in 100 test-tubes. The blood from one patient will suffice for preparing suspension for testing several patients.

"Supposing one wishes to make 1 Cc., sufficient for 10 tubes (or less), including controls. Take an ordinary centrifuge tube, put into it with a graduated pipette 1 Cc. of sodium chloride (0.9 percent) solution. Mark the tube at the surface of the liquid with a paraffin pencil or file. Now fill up with sodium

[5] Shake the tube the same as a clinical thermometer is shaken.

chloride solution to within half inch of the top and mark at the surface of the liquid. Draw out 0.1 Cc. and discard it. Allow blood to drop into the tube until it reaches the last mark on the tube. Centrifugalize and decant the supernatant fluid. Fill the tube with saline solution to the first mark, 1 Cc. This represents the suspension of washed red corpuscles in saline solution from 10 percent whole blood. 0.1 Cc. is the quantity used for each tube."

Antigen.—The regular biological laboratories furnish antigen prepared in the following manner: "Liver or heart tissue is rubbed with sand and then extracted with absolute alcohol by maceration. Ten grammes of tissues are macerated in 100 Cc. of alcohol for one week at 37° C., shaking the container every day. The mixture is then filtered, and the filtrate evaporated to an extractive consistence and dissolved in ether until clear. Pour this solution into a large quantity of acetone. The acetone precipitates certain lipoid substances which are then collected and redissolved in methyl alcohol, in ratio of 3 percent. This constitutes the antigen solution. For use, mix one part of this with 9 parts, 0.9 percent, sodium chloride solution. This dilution should not cause hemolysis in an amount of 0.4 Cc., and 0.4 Cc. should not inhibit hemolysis. The quantity for each tube should be 0.1 Cc., containing at least 5 units."

Testing Antigen.—The concentrated antigen solution furnished by the biological laboratory should be tested in the following way:

"Dilute the concentrated alcoholic solution with 9 parts sodium chloride solution (0.9 percent). This makes an opalescent liquid.

Test it for: (1) Hemolytic power: 0.4 Cc. should not be hemolytic; (2) anticomplementary power: 0.4 Cc. should not inhibit hemolysis; (3) antigenic power: 0.02 Cc. must give complete inhibition with syphilitic serum.

Five units, or 0.1 Cc., of the diluted solution is to be used in each tube.

Amboceptor.—This may be obtained from the regular biological laboratories. It is prepared by repeatedly injecting washed human blood corpuscles (erythrocytes) into rabbits, at intervals of three to five days. Ten days are allowed to elapse after the last injection. The rabbits are then bled and the serum collected. Paper is now saturated with this serum and allowed to dry. The paper is cut in strips and set aside until wanted for use. In this form amboceptor will keep for a considerable length of time.

"Amboceptor paper is standardized by measuring its specific gravity. The measurement of specific activity consists in finding the amount of amboceptor necessary to cause hemolysis in 1 Cc. of a ten-percent suspension of washed human red corpuscles with 0.4 Cc. of fresh guinea-pig serum. Incubate this at a temperature of 37° C. for one hour. The quantity of paper necessary to cause hemolysis under these conditions is known as one unit. In the syphilis test use two units."

Complement.—"Guinea-pigs are bled into a sterile Petri dish. This can be done several hours before the tests are to be made, and the Petri dish kept in the dark at room temperature until desired for use. If the serum has not separated by the time it is wanted, place the Petri dish containing the blood into an incubator at 37° C. for ten or fifteen minutes. Then pipette off the serum. Any corpuscles remaining in the serum must be separated by centrifugalizing. As complement rapidly deteriorates and no method has yet been devised to preserve its activity for more than a few hours, it cannot be supplied commercially. Fresh guinea-pig serum should be used, 0.04 Cc. to each tube.

Method of procedure.—Having on hand the necessary apparatus and reagents, the following procedure for making the tests is adopted:

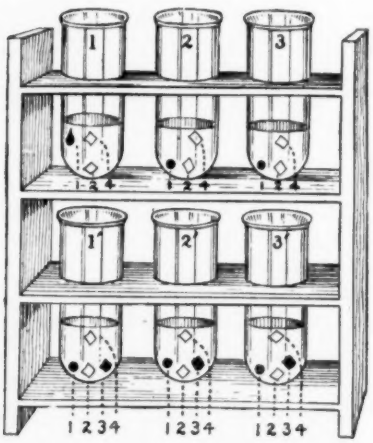
(1) Into each of the tubes, 1 and 1′ (see H), is placed one drop of the patient's serum. Use four drops when inactivated serum is used.

(2) Into each of the tubes, 2 and 2′, is placed one drop of serum from an individual known to be in health. Use four drops, when inactivated serum is used.

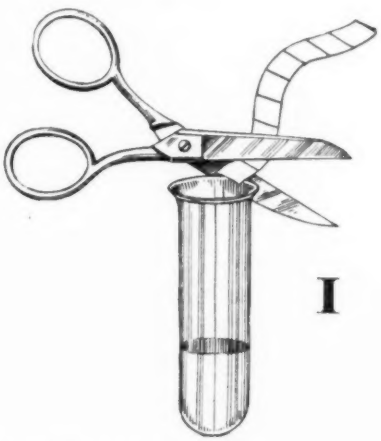
(3) Into each of the tubes, 3 and 3′, is placed one drop of serum from the blood of an individual known to be syphilitic. Four drops should be used when an inactivated serum is employed. A drop of serum is represented by the figures 1-1-1.

(4) Into all the tubes is placed 0.04 Cc. of complement, *i. e.*, fresh guinea-pig serum, marked 2-2-2. This quantity is readily obtained by diluting 1 Cc. fresh guinea-pig serum with 9.0 Cc. sterile normal saline solution (0.9 percent). Then, 0.4 Cc. of the dilution represents 0.04 Cc. of guinea-pig serum.

(5) Into each of the tubes is placed 0.3 or 0.4 Cc. (as stated in table) sodium chloride solution (0.9 percent).



H



I

TABLE SHOWING ARRANGEMENT OF TEST-TUBES AND REAGENTS

Tube.	NaCl.	1 : 10 Antigen.	Serum.	1 : 10 Complement.	1 : 10 Corp.	Amboceptor.
1	0.4	0	1 gtt. patient's	.4	.1	2 units
1′	0.3	0.1	1 gtt. patient's	.4	.1	2 units
2	0.4	0	1 gtt. normal	.4	.1	2 units
2′	0.3	0.1	1 gtt. normal	.4	.1	2 units
3	0.4	0	1 gtt. syphilitic	.4	.1	2 units
3′	0.3	0.1	1 gtt. syphilitic	.4	.1	2 units

Incubate 1 hour

(6) Into each of the tubes, 1′, 2′ and 3′, is placed 0.1 Cc. of diluted antigen (1:10) solution, represented by the figures 3-3-3.

The tubes are then placed in a water-bath at 37° C., the temperature of the body, for one-half hour (or in an incubator for one hour). During this time, in any tubes containing serum from a syphilitic individual, the antigen will unite with the syphilitic amboceptor (antibody) in the syphilitic serum and these two will in turn unite with the complement, fixing it. After incubation, the tubes are removed, and each tube receives 0.1 Cc. of red corpuscle suspension and one square of amboceptor paper (see I), marked 4-4-4 (H). The tubes are then returned to the incubator, where they are allowed to stand (shaking gently every 15 minutes) until hemolysis has occurred in tubes 1, 2 and 3, which are controls because they contain no antigen, and in the tube to which was added one drop of known healthy serum—that is, tube 2′. The tube 3′, containing a drop of serum

from a known syphilitic individual, will still remain cloudy, as it was when placed in the incubator, while the tube 1′, containing serum from the patient, will be a bright, clear red (hemolysis), or cloudy. If the hemolysis does not occur, the reaction denotes the presence of syphilis.

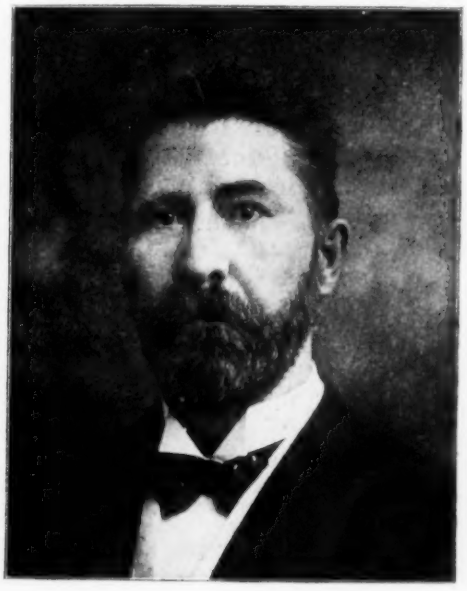
Exceptions.—Serum from persons afflicted with tubercular and mixed types of leprosy, sleeping sickness and yaws may also react positively.

The application of the Noguchi system requires a certain amount of laboratory technique which can only be obtained by experience.

Complement-Fixation Tests in Other Diseases.—The use of complement-fixation tests may be applied to other diseases than syphilis. Much attention is being given to the subject in connection with various infections, such as gonorrhea, glanders, contagious abortion, typhoid fever, tuberculosis, etc. Complement fixation is also used in the standardization of immune serum.

(To be continued.)

GEO. M. BERINGER, Camden, N. J.
Chairman, Committee on Unofficial Standards.



PROF. OTTO RAUBENHEIMER
Chairman, Committee on A. Ph. A. Recipe Book.

SECTION ON PRACTICAL PHARMACY AND DISPENSING, AMERICAN PHARMACEUTICAL ASSOCIATION

GENERAL FORMULAS IN U. S. P. IX.*

BY OTTO RAUBENHEIMER, PHAR.D.

Among the 24 General Principles to be Followed in the Ninth Revision in the Abstracts of the Proceedings of the Ninth Decennial Convention, 1910, published in U. S. P. IX, I find on p. xxxii the following:

7. *General Formulæ.*—It is recommended that general formulæ be introduced, as far as the particular nature of the several drugs will permit, for fluidextracts, tinctures and such other preparations as are made by identical processes, and that the general formula to be followed in each case be merely indicated by reference.

In the Preface to U. S. P. IX, I find under the new features the following on p. xxxvii:

General Formulas.—This term is used to define a plan to save space and to avoid repetition by printing a typical formula for galenical preparations. It will be seen that there are four type processes for fluidextracts designated by the letters A, B, C and D; two type processes are provided for tinctures, P and M, and also a type process for medicated waters. The Convention recommended the introduction of this plan (as pointed out above).

The object of this paper is to explain these *General Formulas* or *Type Processes* for the benefit of pharmacists and students as well. Why were they introduced? The answer is: "To save space and to avoid the useless repetition, for which our Pharmacopœia has been criticized so often."

AQUÆ AROMATICÆ.

Aromatic Waters.

The General Process is placed at the end of the chapter, on page 60, and therefore not in strict alphabetical order, and is as follows:

Volatile Oil	2 mils
Purified Talc	15 Gm.
Distilled Water, recently boiled	1000 mils

Triturate the volatile oil with the purified talc, add the recently boiled distilled water gradually with continued trituration, filter, and pass the filtrate through the filter repeatedly until the Aromatic Water is perfectly clear.

The U. S. P. VIII contains a chapter, but no General Process for Aquæ or Medicated Waters, which term has been properly replaced by Aromatic Waters. The General Process in U. S. P. IX is the same as the process for most of the Aromatic Waters in U. S. P. VIII with one single, but important, difference, namely, that now the distilled water is ordered to be *recently boiled.* To many this may seem unnecessary, inasmuch as distilled water has already been boiled. We should, however, remember that distilled water upon keeping will not remain germ-free, especially when kept in a five-gallon bottle of which the cork is missing, thus permitting not only dust and germs to enter but also insect life. "Distilled Water, recently boiled" has been adopted by the Revision Committee as a safeguard and is quite appropriate in this age of sanitation.

* Read before section on Practical Pharmacy and Dispensing, A. Ph. A., Atlantic City meeting, 1916.

The following 5 waters are made by this General Process: Anise, Cinnamon, Fennel, Peppermint and Spearmint.

The alternative methods are the same as in U. S. P. VIII, namely, the use of pulped filter paper, direct solution of oil in recently boiled distilled water and distillation of the drug or volatile oil with water. In addition the U. S. P. IX also sanctions the use of Purified Silicious Earth, or Purified Kieselguhr or Purified Infusorial Earth, which is official under the title of Terra Silicea Purificata. Quite an innovation is the statement at the end of the chapter in U. S. P. IX, namely: "Aromatic Waters should not be permitted to freeze." The writer is somewhat responsible for this, owing to his experience of the freezing of a ten-liter bottle of French Rose Water, which upon thawing had completely lost its fragrant odor. After all, experience is the best teacher, and this incident proved that freezing destroys the aromatic properties.

Just one word of caution before leaving this subject, and that is, Aromatic Waters from volatile oils should never be made in too large quantities. They do not improve by age. Many pharmacists no doubt have noticed that in Cinnamon Water, after a time, there is formed a flocculent precipitate and that the aromatic odor decreases. What happens? The cinnamic aldehyde of the oil of cinnamon is oxidized or hydrolyzed to cinnamic acid, which is odorless.

FLUIDEXTRACTA.

Fluidextracts.

Here a valuable saving of space is achieved, as can be seen from the following figures:

U. S. P. VIII contains 85 Fluidextracts described on 55 pages.

U. S. P. IX contains 49 Fluidextracts described on 21 pages.

After a definition of Fluidextracts an outline of the 4 Type Processes is given, followed by a description in detail. These processes are based upon the menstrua used for the extraction of the drugs.

Type Process A for menstrua of alcohol or alcohol and water: The usual process of percolation is followed. 1000 Gms. of powdered drug is moistened with sufficient menstruum and is macerated in a tightly covered container for six hours, and is then packed in a cylindrical percolator. Sufficient menstruum is added to have a stratum above the drug, and a forty-eight-hour maceration follows. Percolation is then allowed to proceed, at the rate of 10 drops per minute, until 850 mils are obtained, which is reserved. Add sufficient menstruum in percolator until the drug is completely exhausted, regulating the flow to 20 drops per minute. The alcohol is regained from this second percolate, and the residue is concentrated at a temperature not exceeding 60° C. to a soft extract, which is dissolved in the reserved portion. Finally sufficient menstruum is added to make 1000 mils, or the volume determined by calculation from the assay.

The primary moistening and maceration for six hours is necessary so the menstruum will penetrate and soften the drug and at the same time swell same. The secondary macero-percolation is intended to extract the drug. The concentration of the second percolate to a soft extract is done at the temperature not exceeding 60° C. (against 50° C. in U. S. P. VIII) in order not to injure the active principles.

Fluidextracts prepared by Type Process A: Belladonna Root, Buchu, Cannabis, Cimicifuga, Digitalis, Eriodictyon, Eucalyptus, Gelsemium, Gentian, Grindelia, Guarana, Hyoscyamus, Nux Vomica, Pilocarpus, Podophyllum, Rhubarb, Sabal, Sarsaparilla, Senna, Spigelia, Staphisagria, Stillingia, Sumbul, Veratrum Viride, Viburnum Prunifolium, Xanthoxylum and Ginger (27).

Type Process B for menstrua containing glycerin or an acid: In this class two menstrua are used. Menstruum I contains the glycerin or acid and Menstruum II is composed of alcohol and water. No. I is first employed, so as to thoroughly extract the drug, and is followed by No. II to complete the exhaustion. The *modus operandi* itself is the same as in Type Process A.

The addition of glycerin to the menstruum serves 3 purposes: (1) Softening and penetrating; (2) solvent for tannin principles; (3) retarding precipitation.

The addition of acid converts the alkaloids in the drug into soluble salts, as f. i. acetate in Lobelia or hydrochloride in Ergot, Ipecac, and Cinchona. Glycerin is also used in the latter drug, so as to extract the cincho-tannic acid.

Fluidextracts prepared by Type Process B: Aspidosperma, Cinchona, Ergot, Pomegranate, Hydrastis, Ipecac, Lobelia, Rose, Compound Sarsaparilla, Taraxacum and Uva Ursi (11).

Menstruum containing:

Acetic Acid: Lobelia.

Hydrochloric Acid: Ergot and Ipecac.

Hydrochloric Acid and Glycerin: Cinchona.

Glycerin: Aspidosperma, Pomegranate, Hydrastis, Rose, Comp. Sarsaparilla, Taraxacum and Uva Ursi.

Type Process C, better known as Fractional or Divided Percolation: It is especially recommended for drugs containing volatile ingredients, or constituents which are injured by heat. Inasmuch as no heat whatever is used, the resulting products can be termed " Fluidextracts by Cold Process."

The *modus operandi* is as follows:

Divide 1000 Gm. of the ground drug into 3 portions of 500 Gm., 300 Gm. and 200 Gm., which for convenience we will name I, II and III. Moisten, macerate and percolate Portion I in the usual manner. Reserve the first 200 mils and continue percolation, reserving percolates *A, B, C, D* and *E*, of 300 mils each.

Use these additional percolates to moisten, macerate and percolate Portion II. Reserve the first 300 mils and continue percolation, reserving percolates *A, B, C* and *D*, of 200 mils each.

Use these additional percolates to moisten, macerate and percolate Portion III, and, if necessary, some of the original menstruum to percolate and reserve 500 mils.

Mix these reserved percolates of 200, 300 and 500 mils, thus producing 1000 mils of finished fluidextract.

The following table thoroughly explains this process:

		I	II	III	Total
Drug		500 Gm.	plus 300 Gm.	plus 200 Gm.	equals 1000 Gm.
Reserved Percolate		200 mils	plus 300 mils	plus 500 mils	equals 1000 mils
Additional Percolates	*A*	300 mils	200 mils		
	B	300 mils	200 mils		
	C	300 mils	200 mils		
	D	300 mils	200 mils		
	E	300 mils			
Total		1500 mils	800 mils		

Type Process C can also be used as an alternative process in the formulas in which Type Process A is directed. Fractional Percolation is *the* process for excellence by which the retail pharmacist can himself prepare his own fluidextracts, with but very little trouble and without very much loss of alcohol. In fact, the alcohol may be recovered by distillation of the marc of the three Portions I, II, and III.

Fluidextracts prepared by Type Process C: Aconite, Aromatic and Bitter Orange Peel (3).

Type Process D for aqueous menstrua: This process is used when the drug is readily extracted by infusion and percolation with boiling water. One thousand grammes of the ground drug are mixed with 5000 mils of boiling water and allowed to macerate in a covered container for two hours in a warm place. Then transfer to a tinned or enameled metallic percolator and continue percolation with boiling water until the drug is exhausted. Tin is recommended because it is not affected by the organic acids in the drugs. The percolate is evaporated on a water bath or strain bath to the specified volume and the directed amount of alcohol is added to act as a preservative, as the aqueous fluidextract would get sour.

Fluidextracts prepared by Type Process D: Cascara Sagrada, Frangula and Triticum (3).

Several drugs require special manipulation to obtain satisfactory fluidextracts, and for these appropriate formulas are printed in full in the text of the U. S. P. IX.

Fluidextracts prepared by Special Processes: Aromatic Cascara Sagrada, Colchicum Seed, Glycyrrhiza, Squill and Senega (5).

TINCTURÆ.

Tinctures.

The General Chapter in U. S. P. IX gives definitions of tinctures, potent tinctures and assayed tinctures, directions for keeping and a full description of the 2 Type Processes.

Type Process P—Percolation: The drug in proper fineness, as designated by the U. S. P., is moistened with a sufficient quantity of the prescribed menstruum to render it evenly and distinctly damp and is then transferred to a percolator, in which it is allowed to stand, well covered, for six hours. This moistening and maceration has the purpose to soften the drug, and to permit it to swell. For this reason the powder in the percolator is not packed until after the lapse of six hours. A sufficient quantity of menstruum is then added to completely saturate the drug and leave a stratum above it. When the liquid begins to drop from the percolator, close the lower orifice and allow to macerate for twenty-four hours, well covered. During this maceration the menstruum completely penetrates the drug and extracts the soluble principles. It is for this reason that the first percolate, after the twenty-four-hour maceration, is practically so saturated that it resembles a fluidextract. It is an erroneous idea which, I am sorry to state, has found hold on some students and pharmacists, that the first percolate should be poured back into the percolator! Such teaching is a disgrace to pharmacy!

The last step in this process is the addition of menstruum through the percolator to make 1000 mils of finished tincture.

The statement has frequently been made, that some students never learn to percolate properly. My answer to this is that such students should not be allowed to graduate, as they certainly are not fit to be pharmacists.

The General Formula of Type Process P also provides a *Modification for Assayed Tinctures.* In this case only 950 mils, instead of 1000 mils, are percolated. A sample of this is assayed, and from the alkaloidal content thus determined, the amount of alkaloids in the remainder of the liquid is determined. Then sufficient menstruum is added to make the finished tincture conform to the required alkaloidal standard.

Most of the tinctures in the U. S. P., 28 out of 54, are prepared by percolation.

Justly so, as this process, although originated in France, has been perfected by American pharmacists, perfected to such a high degree that percolation has been adopted in the Brussels Agreement, or International Protocol (P. I.), for the preparation of the potent tinctures.

Tinctures prepared by Type Process P: Aconite, Bitter Orange Peel, Belladonna Leaves, Calumba, Cannabis, Capsicum, Cardamom, Cinchona, Compound Cinchona, Cinnamon, Colchicum Seed, Digitalis, Gelsemium, Compound Gentian, Hydrastis, Hyoscyamus, Lobelia, Nux Vomica, Physostigma, Pyrethrum, Quassia, Rhubarb, Aromatic Rhubarb, Stramonium, Valerian, Ammoniated Valerian, Veratrum Viride and Ginger (28).

Type Process M—Maceration: This old process is resorted to, when from its physical character the drug is not suitable for percolation. Such is the case if the drug is a resin (Benzoin) or gum-resin (Asafetida) or balsam (Tolu). Maceration is also used for fresh drugs (Lemon Peel) or when the quantity of drugs is very small (Camphorated Opium).

Type Process M of U. S. P. IX is very simple. Maceration is carried on in a stoppered container, to avoid loss by evaporation, in a moderately warm place, because this facilitates extraction, for about three days with about three-fourths of the menstruum. It is absolutely necessary that agitation and maceration go hand in hand, otherwise the menstruum in contact with the drug becomes saturated, while the liquid above it has no chance to exert any solvent action. After the three days, or when the macerated drug is practically extracted, the mixture is transferred to a filter, and when the liquid has completely drained off, then the residue on filter is gradually washed with enough menstruum to produce the finished tincture.

The "old-timers" in pharmacy will well remember that during their apprenticeship it was their daily duty to agitate the galenicals prepared by maceration. Let the younger generation of pharmacists also remember this!

Tinctures prepared by Type Process M: Aloes, Asafetida, Sweet Orange Peel, Benzoin, Compound Benzoin, Compound Cardamom, Compound Gambir, Guaiac, Ammoniated Guaiac, Compound Lavender, Lemon Peel, Myrrh, Camphorated Opium and Tolu (14).

In a few instances the drugs require special manipulations for the preparation of a satisfactory tincture, and for these the formulas in full are given in the text of U. S. P. IX.

Tinctures prepared by Special Processes: Arnica, Cantharides, Kino, Lactucarium, Musk, Opium, Deodorized Opium, Sanguinaria, Squill and Strophanthus (10).

Two tinctures in U. S. P. IX (as in U. S. P. VIII) are simply alcoholic solutions of chemical substances.

Tinctures prepared by Solution: Ferric Chloride and Iodine (2).

CONCLUSION.

In conclusion, I believe that the General Formulas for Aromatic Waters, Fluidextracts and Tinctures adopted in the U. S. P. IX are to be highly recommended. They have the following advantages:

(1) They save valuable space in the U. S. P.
(2) They avoid useless repetition.
(3) They can be easily remembered by students.
(4) They can be logically explained by teachers.
(5) They can be readily practised by pharmacists.

Let us have more General Formulas!

DEPARTMENT OF PHARMACY, COLLEGE OF JERSEY CITY.

THE NEW PHARMACOPŒIA AND THE NEWER PHARMACY.*

BY H. V. ARNY.

The long expected ninth edition of the United States Pharmacopœia is now before us and what are we going to do with it? This is not the time, the place nor the person to go into an elaborate exposition of its features, but a few words upon the responsibilities of the pharmacist who considers the Pharmacopœia as his guide, may be entirely pertinent.

There is no better way to study the changes that have come over Pharmacy during the past half century than to compare the Pharmacopœias of 1870 and of 1916. The first mentioned work was a book of recipes with some macroscopical descriptions of drugs and chemicals thrown in. Even the method of manufacture of such chemicals as benzoic, gallic and tannic acids; aconitine and other alkaloids, potassium bromide and other salts was given in detail. On the other hand, the Pharmacopœia that has just come to us is long on descriptions and short on recipes. Even such old timers as yellow mercuric oxide and bismuth and ammonium citrate are presented without methods of manufacture, while descriptions and tests for identity and assays have been elaborated until it requires a real chemist in a real laboratory to conduct them.

We have grown accustomed to volumetric analyses, but how about the gravimetric, the electrolytic and polariscopic assays that are now provided for those chemicals and preparations which do not adapt themselves to volumetric methods?

The prediction of a prominent manufacturer that the National Food and Drug Law would drive the preparation of pharmaceuticals, galenical as well as chemical, from the drug store to the large factory, is about to be realized and unless the retailers bestir themselves they will become merely the vendors of other men's packaged products with all of the evils—price cutting and otherwise—that the handling of package goods entails.

So much for the new Pharmacopœia, but what of the newer Pharmacy? Is the retailer to be merely a drop-a-nickel-in-the-slot vending machine, or is he to be a real pharmacist? This is being answered each day by the individuals within the ranks of retail pharmacy *by their own acts.*

Thus within the past few months the question has been asked twice by the writer in ordinary mercantile transactions. An order for "one ounce of cold cream" without specification was filled by sending an ounce jar of a largely advertised cream; so largely advertised that it is frequently found among the "great slaughter" advertisements of the department stores. Another order for "four ounces of aromatized castor oil, like the product of the new N. F." was supplied by sending an original package of the aromatic castor oil of one of our well-known pharmaceutical houses.

This druggist's answer was therefore that he would rather be a vendor than a producer. To such an one the ninth edition of the United States Pharmacopœia has even less than no appeal; for him it has no interest.

And finally a few words to those to whom the new Pharmacopœia is a vital thing; to those who not only make their own galenicals, but who also have sufficient ability and the training to conduct the chemical tests that our new standard prescribes; the men who have kept abreast with pharmaceutical progress; the class

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Atlantic City meeting, 1916.

the writer had in mind when two years since he suggested the American Institute of Prescriptionists, put to sleep so successfully in San Francisco last year by those skilled anesthetists, Dr. Hynson and his four able co-workers.

To my mind the new Pharmacopœia furnishes the best possible reason for the existence of the highly trained pharmacist and each of these will make a great mistake if he modestly declines to use the Pharmacopœia as a means of impressing the medical and lay public that he possesses, not merely the knowledge as to what is in the Pharmacopœia, but also the ability to actually carry out the operations which that standard prescribes for the manufacture of official preparations and for the determination of the purity of official drugs and chemicals.

In short, the real pharmacist of the present decade must be more than a peruser of the U. S. P. He must be a user of it as well.

TERMS USED IN ELECTRICITY.

The volt is the unit of electrical pressure; the ampere, the unit of current strength; the ohm, the unit of resistance; the watt, the unit of electric power; and the least of all known, farad, the unit of electrical capacity.

Current strength is determined by dividing the pressure by the strength, thus the number of amperes of current strength is equal to the number of volts divided by the number of ohms. The watt indicates the amount of electric energy being used when an ampere of current is flowing under a pressure of one volt. However, the term kilowatt, or one thousand watts, is more generally used. The unit of electrical capacity, the farad, will contain one ampere of current at one volt pressure for one second of time. The farad is divided into a million equal parts, each part termed the microfarad, and this is the term most used in stating electrical capacity.

The term "volt" is derived from the name of Alessandro Volta, an Italian, born in 1745. He was one of the first men to try to harness electricity, yet he died without the knowledge that a "volt" was the pressure necessary to force an ampere of current through a conductor having one ohm resistance.

Likewise, Andre Marie Ampere, father of the science of electro-dynamics, never knew that an "ampere" was equal to the number of volts of pressure divided by the ohms of resistance. He was born in France in 1755.

George Simon Ohm was the author of what is known as Ohm's Law, now universally recognized as the unit for measuring the resistance of electricity, but it was not until years later that the unit of resistance was named after the German physicist. The number of ohms is computed by dividing the number of volts by the number of amperes.

With either of the two units known, the third can easily be found. Likewise, electrical energy is as easily figured. The "watt" indicates the amount of electric energy being used when one ampere of current is flowing under the pressure of one volt. The watt is derived from the name of James Watt, the man who really invented the modern steam engine. Without the principle of the steam engine, however, electricity as a motive power could not do the powerful tasks it daily accomplishes.

Michael Faraday made the great discovery of magnetic electric currents, the principle on which all modern dynamos and transformers are constructed. In recognition of his great work scientists have named the unit of electrical capacity the "farad." This unit of capacity will contain one ampere of current at one volt pressure for one second of time.—*London Tid Bits.*

PHARMACEUTICAL FORMULAS

PROPOSED FOR A. PH. A. RECIPE BOOK

Thus far a collection of 114 Pharmaceutical Formulas has been compiled and published in THE JOURNAL, Vol. I, pp. 169, 366, 505, 637, 760 and 1307 (Feb. to Nov. 1912). Beginning with the March 1916 number these Formulas will be continued in monthly instalments by the Committee, and *all* members of the American Pharmaceutical Association are earnestly requested to render assistance by sending suitable formulas and criticisms to the Chairman,

OTTO RAUBENHEIMER, Brooklyn, N. Y.

Contributed by the Chairman:

No. 286.

PULVIS INSPERSORIUS ANTISEPTICUS.

Antiseptic Dusting Powder.

Lux.

Boric Acid	4 Gm.
Lycopodium,	
Zinc Oxide,	
Starch,	
Talc, of each	24 Gm.

No. 287.

PULVIS ZINCI ET ACIDI BORICI.

Zinc and Boric Acid Powder.

B. P. Cx.

Zinc Oxide,
Boric Acid, equal parts.

No. 288.

PULVIS ZINCI ET AMYLI.

Zinc and Starch Powder.

B. P. Cx.

Pulvis Exsiccans. F.M.G.

Zinc Oxide,
Starch, equal parts.

No. 289.

PULVIS ZINCI ET AMYLI COMPOSITUS.

Compound Zinc and Starch Powder.

B. P. Cx.

Zinc Oxide,	
Starch,	
Boric Acid,	
Talc, of each	25 Gm.
Oil of Geranium	0.2 mil

No. 290.

PULVIS INSPERSORIUS CUM ZINCO OXYDATO.

Zinc Oxide Dusting Powder.

F. M. G.

Zinc Oxide	10 Gm.
Rice Starch	20 Gm.
Talc	20 Gm.

No. 291.

PULVIS SALICYLICUS CUM ZINCO.

Salicylated Zinc Powder.

F. M. G.

Salicylic Acid	1 Gm.
Zinc Oxide	9 Gm.
Wheat Starch	20 Gm.
Talc	20 Gm.

No. 292.

PULVIS ADSPERSORIUS SALICYLATUS.

Salicylated Dusting Powder.

Ph. Aust. VIII.

Salicylic Acid	2 Gm.
Orris	10 Gm.
Zinc Oxide	20 Gm.
Wheat Starch	28 Gm.
Talc	40 Gm.

No. 293.

PULVIS ZINCI ET ACIDI SALICYLICI.

Zinc and Salicylic Acid Powder.

B. P. Cx.

Salicylic Acid	5 Gm.
Zinc Oxide	20 Gm.
Starch	75 Gm.

No. 294.

PULVIS ALUMINIS COMPOSITUS.

Compound Alum Powder.

Squibb's Surgical Powder.

Phenol	1 Gm.
Camphor	3 Gm.
Exsiccated Alum	96 Gm.

Triturate to a fine powder. Keep in well-closed vessels.

This preparation was introduced by Dr. E. R. Squibb in 1868. It is used as an antiseptic and absorbent dusting powder for fresh and discharging wounds, causing rapid healing. It is also a good styptic. Besides this, the powder dissolved in water can be used as an astringent wash and gargle.

FOOT POWDERS.

PULVIS PRO PEDIBUS.

These preparations are used extensively during the warm weather. Besides sprinkling in the shoes and socks or stockings it is also advisable to rub the powder on the feet, night and morning. Almost immediate relief will be obtained by this "common sense" application. Talc is the chief ingredient in these foot powders and the *Pulvis Talci Compositus* N.F. is an excellent type preparation. The Chairman has improved same by the addition of powdered asbestos, which acts as an absorbent and an insulator.

No. 295.

IMPROVED FOOT POWDER.

(Raubenheimer.)

Compound Powder of Talc N.F.,
Powdered Asbestos, equal parts.

No. 296.

PEROXIDE FOOT POWDER.

Zinc Peroxide	10 Gm.
Sodium Perborate	15 Gm.
Talc	75 Gm.

No. 297.

PULVIS SALICYLICUS CUM TALCO.

Salicylstreupulver.

D.A.B.V.

Salicylic Acid	3 Gm.
Wheat Starch	10 Gm.
Talc	87 Gm.

See also Formula No. 124, Astringent and Antiseptic Foot Powder, J. A. PH. A., March, 1916, p. 310.

FACE POWDERS.

Face powders containing talc as the principal ingredient possess the great disadvantage of producing a "shine or gloss." The following formulas show the con.position.

No. 298.

VELOUR FACE POWDER.

Corn Starch	200 Gm.
Wheat Starch	50 Gm.
Talc	50 Gm.
Magnesium Carbonate	20 Gm.

Perfume, a sufficient quantity.

No. 299.

POUDRE LA MEXICANA.

Precipitated Chalk	100 Gm.
Wheat Starch	100 Gm.
Talc	30 Gm.

Perfume, a sufficient quantity.

No. 300.

PERBORATE FACE POWDER.

Talc	94 Gm.
Sodium Perborate	5 Gm.
Extract of Violet	1 Gm.

To whiten the skin the quantity of sodium perborate can be increased.

No. 301.

NAIL ENAMEL.

I.

Tin Oxide	100 Gm.
Talc	40 Gm.
Carmine	1 Gm.

Perfume, a sufficient quantity.

II.

Tin Oxide	100 Gm.
Talc	30 Gm.
Powdered Orris	10 Gm.
Rice Starch	10 Gm.
Carmine	0.8 to 1 Gm.

No. 302.

CREME IRIS.

Borax	0.5 Gm.
Talc	2.0 Gm.
Zinc Oxide	10.0 Gm.
Glycerite of Starch	87.5 Gm.

Oil of Tuberose, to perfume.

No. 303.

GREASELESS CREAM.

Stearic Acid	10 Gm.
Oil of Theobroma	1 Gm.
Sodium Carbonate, crystals	4 Gm.
Borax	4 Gm.
Talc	20 Gm.
Glycerin	8 mils
Alcohol	6 mils
Water	80 mils
Oil of Rose	5 drops
Oil of Bitter Almond	1 drop

Melt the stearic acid and oil of theobroma on a water-bath, and gradually add with constant stirring the solution of sodium carbonate, borax and glycerin in hot water, until effervescence ceases and a soap is formed. Then incorporate the talc, and when cool mix in the alcohol and perfume.

Sodium carbonate, crystals, may be replaced by one-half the quantity of the monohydrated salt.

No. 304.

TOOTH PASTE.

Precipitated Chalk	80 Gm.
Talc	20 Gm.
Glycerin	17 Gm.
Powdered Soap	16 Gm.
Powdered Sugar	8 Gm.
Color,	
Perfume, of each, a sufficient quantity,	

No. 305.

EAU DE LYS.

Zinc Oxide	10 Gm.
Talc	10 Gm.
Glycerin	20 Gm.
Rose Water	2000 mils

No. 306.

LOHSE'S LILIENMILCH.

Zinc Oxide	2 Gm.
Talc	2 Gm.
Glycerin	4 mils
Rose Water	200 mils

LIQUID FACE POWDERS.

No. 307.

BLANC DE PERLE.

Talc	200 Gm.
Bismuth Oxychloride	50 Gm.
Rose Water	1200 mils

No. 308.

BLANC DE FARD.

Talc	200 Gm.
Bismuth Oxychloride	80 Gm.
Rose Water	1200 mils

No. 309.

POLISHING POWDER.

Infusorial Earth	30 Gm.
Iron Subcarbonate	30 Gm.
Precipitated Chalk	15 Gm.
Citric Acid	15 Gm.
Alum	15 Gm.
Talc	8 Gm.

Make into a fine powder.

This powder also removes iron rust. Iron subcarbonate or "crocus martis" or "caput mortuum" is the residue of the roasting of iron pyrites in the manufacture of sulphuric acid.

STAINS.

The U.S.P. IX, in that excellent chapter, *Diagnostical Reagents and Clinical Tests*, contains a great many formulas for stains and accessories for use in connection with the study of Microörganisms. The following are missing, although frequently used.

Contributed by Rudolph Lundgren, Youngstown, Ohio:

No. 310.

ANILINE GENTIAN VIOLET.

Sterling's Solution of Gentian Violet.

Gentian Violet	5 Gm.
Aniline	2 mils
Alcohol	20 mils
Distilled Water, a sufficient quantity,	
To make	100 mils

Dissolve the gentian violet in the alcohol, add the aniline and then the distilled water, and filter through a wetted filter.

For use as a stain for bacteria in Gram's method, encapsulated organisms in Welch's method, and flagella in Loeffler's method.

The chapter on Stains in U.S.P. IX contains another formula which is to replace the above, under the title of *Aniline Water—Methyl Violet 6B Solution.*

Contributed by the Chairman:

No. 311.

STABILIZED GENTIAN VIOLET.

Of the many stains which serve the bacteriologist in the capacity of a differential stain, there is not any single stain which has so wide an application as the one known as Gram's. The only disadvantage in the use of the stain is that the gentian violet used deteriorates, and on that account should be freshly prepared when wanted.

In a series of experiments, made by W. D. Stovall, M.D., and M. Starr Nichols, B.S., which are published in *J. A. M. A.*, May 20, 1916, p. 1620, they recommend the following stable stain.

Aniline	28 mils
Gentian Violet, Gruebler	8 Gm.
Alcohol, 95 percent	100 mils
Normal Hydrochloric Acid	5 mils
Distilled Water, a sufficient quantity,	
To make	1000 mils

The gentian violet is dissolved in the alcohol. The hydrochloric acid is added to the aniline, and the whole is dissolved in enough water to make 900 mils. The aqueous solution is filtered and added to the alcoholic solution of the stain. The whole is filtered and is then ready for use.

This stain keeps for about three months under ordinary laboratory conditions.

Contributed by C. G. Spalding, New Haven, Conn.:

No. 312.

GABBETT'S STAIN.

Methylene Blue	2 Gm.
Sulphuric Acid, 25 percent	100 mils

Used as a decolorizer and a counterstain combined in staining tubercle bacilli and other acid-fast bacteria. After the fixed smear is steamed with carbol-fuchsin for five minutes the slide is immersed for one minute in this solution, rinsed in water and dried. This method, while rapid and very convenient, is not so reliable as the original Ziehl-Neelson method, where the carbol-fuchsin is decolorized by a weak mineral acid and then counterstained with aqueous methylene blue.

No. 313.

CARBOL GENTIAN VIOLET.

Sat. Alcoholic Sol. Gentian Violet	10 mils
Sol. Phenol, 2.5 percent	90 mils

The chapter on Stains in U.S.P. IX contains another formula, which is to replace the above, under the title of *Solution of Carbol Methyl Violet.*

This is one of the several formulas suggested to replace the Aniline Gentian Violet Solution used in the Gram method of staining bacteria, which deteriorates rapidly. The carbolic solution keeps well for three months, even in warm weather.

No. 314.

NEISSER'S STAIN.

A.

Methylene Blue	0.1 Gm.
Alcohol	2.0 mils
Glacial Acetic Acid	5.0 mils
Water	95.0 mils

B.

Bismarck Brown	2 Gm.
Water	100 mils

This is a differential stain for diphtheria bacilli. The fixed smear is stained for five seconds with Solution A, washed in water and counterstained with solution B for five seconds. By this method the polar bodies are stained blue, while the bacillary bodies are stained brown.

Contributed by Dr. J. Weinstein, N. Y. City:

No. 314a.

ROUX'S STAIN.

Roux's method is also employed for the above purpose. Two solutions are necessary:

A.

Dahlia Violet	1 Gm.
Alcohol, 90 percent	10 mils
Distilled Water, a sufficient quantity,	
To make	100 mils

B.

Methyl Green	1 Gm.
Alcohol, 90 percent	10 mils
Distilled Water, a sufficient quantity,	
To make	100 mils

Before use, one part of solution A is mixed with three parts of solution B. The preparation is stained with the mixture for two or three minutes.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CINCINNATI.

The Cincinnati Branch, A. Ph. A., will resume its monthly meetings early in October for the session 1916–17.

The outgoing officers and committees feel gratified for the successful achievements during the 1915–16 gatherings, such subjects being presented as:

The Progress and Results of the Administration of the Harrison Anti-Narcotic Act, by Prof. J. H. Beal,

Aspirin and other Synthetics,—their uses and abuses, by Prof. H. W. Jones,

A Lecture on "Alcohol,"—illustrated, by Dr. S. P. Kramer,

Modern Trend of Biochemistry,—illustrated, by Prof. Edw. B. Reemelin, Biological Aspect of the Behavior of Emulsions,—illustrated, by Prof. Martin Fischer,

Analysis of Stomach Contents, by Leon G. Tedeshe,

and many other subjects, all of which furnished highly interesting and instructive discussions, participated in by the members, who appreciate the fact that, through the efforts of the committees, such subjects and discussions furnish food for thought, inspiration and effort for further individual endeavor, in fact, giving the members what should really be the object of every Local Branch—a Post-Graduate Course in Pharmacy.

The incoming officers and committee men are enthusiastic and promise to make the session of 1916–17 even more attractive than any of the preceding ones, energetic preparations already being on foot for presenting live and timely topics.

Officers for 1916–17: President, Dr. J. C. Otis; first vice-president, Louis Werner; second vice-president, Theo. D. Wetterstroem; treasurer, Julius Greyer; secretary, Chas. A. Apmeyer; executive committee, third-year, C. T. P. Fennel.

The Cincinnati Branch enjoys a steady growth in membership, and the treasurer reports a healthy balance in the treasury.

CHAS. A. APMEYER, *Secretary*.

To the Branches of the American Pharmaceutical Association.

The JOURNAL of the A. Ph. A. desires to print the reports of the Branch Meetings as promptly as possible; therefore, if the proceedings are sent immediately after the meeting it will facilitate matters.

Papers and addresses of importance should be submitted for publication. It is realized that it is the desire frequently to have these published by other journals. Usually this is satisfactory but in order to conform with the requirements they should first be submitted. If there is any way that the JOURNAL can be of assistance, the Editor will be glad to do everything in his power toward that end.

The Association, and the JOURNAL as the official organ, hopes for successful and profitable meetings during the coming year. A carefully outlined preparatory program for the monthly meetings will add materially toward making every meeting interesting.

THE JOURNAL OF THE A. PH. A.
253 Bourse Building, Philadelphia.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 27.

PHILADELPHIA, PA., July 11, 1916.

To the Members of the Council:

In the previous Council Letter, Motion No. 54, granting the J. B. Lippincott Company permission to use the text of the N. F. IV, under certain conditions, was presented, being favorably recommended to the Council by the Committee on Publication.

The offer of the J. B. Lippincott Company was, in brief, as follows: To pay one thousand dollars for and in consideration of permission to use the N. F. IV text in whole or in part in "The Practice of Pharmacy," printing upon the copyright page that permission had been granted by the American Pharmaceutical Association, in the usual form, and that at least ninety days shall elapse after the issue of the N. F. IV before "The Practice of Pharmacy" is printed.

The following communication upon the subject of Motion No. 54 has been received:

CLEVELAND, O., July 8, 1916.

To the Secretary of the Council of the A. Ph. A.:

In reference to my vote on Motion 54 I beg to submit the following:

1. The National Formulary, as a book, belongs without doubt to the A. Ph. A.; but the Association can lay no claim, nor establish a clear title, to any individual formula. Where do these formulas come from? Some are reprints from former pharmacopœias, some are taken from foreign pharmacopœias, some are copied from medical and pharmaceutical text-books and journals. But all of them are old; they have appeared in print, or been in use, many years ago, the majority probably long before there was any thought of a Formulary. None of them have been originated by the Association, or by the Committee on Formulary, unless it be the imitations of proprietary articles, and these should be thrown out. The very fact that a formula appears in the Formulary is proof that it has been extensively used for a considerable time in some part of the country, as the preface of the second edition of the Formulary distinctly states. Let us take an instance. The formula for Sun Cholera Mixture was originally published by the *N. Y. Daily Sun*, that gave it its name, long before there was an A. Ph. A.; it is common property. How can we say that its adoption in the Formulary gives us the exclusive right to its reprint? A man might just as well compile a book of quotations from Shakespeare, copyright the book and then claim exclusive right to the quotations. The idea is too absurd to admit of any argument. Nor does the fact that some of the formulas have been tested, revised and slightly altered by our Committee constitute a right of ownership. During the last year I had some correspondence on this subject with the Commissioner of Patents at Washington. While he naturally declined to consider a hypothetical case, leaving the decision to the courts when an actual trial should turn up, he stated in his letter:

"It is perfectly legal to publish and copyright a book consisting of quotations, formulas or parts from other books; but such copyright does not confer to the publisher any right of ownership of the quotations as such, even if he changes them to suit his case; in fact such alteration might constitute a cause of action against him by the original author, provided the latter has himself secured a copyright."

But aside from the legal aspect, common sense will tell us that we cannot acquire a clear title to the mental productions of others by simply compiling and printing them. The National Formulary, as a book, is the property of the A. Ph. A.; but each individual formula has been, is now, and ever will be, the property of the whole pharmaceutical profession. Any man has as much right to print these formulas as the A. Ph. A., provided he does not call his book "The National Formulary."

2. The National Formulary is a part of the Proceedings of the A. Ph. A. and should be printed as part of the Report on Progress of Pharmacy, in fact, I consider it the most important part of this report. In our Year Book we find reports and formulas on all possible subjects and methods practised in Europe, Africa and Asia. But the thing that interests every pharmacist most, viz.: the development of

pharmacy at home, as evinced in new compounds, galenicals and formulas, is left out. Even the members of the A. Ph. A., each of whom is part owner of the Formulary, must pay for this most desirable information. I can trace three failures in my efforts to obtain new members to this fact, and a former member of the A. Ph. A. in Cleveland who resigned a year ago, when urged by me to come back, replied: "What kind of an Association is yours? You first promise us books and literature on all new things in return for our dues and then charge us extra for the only information that is of any value for us. You are fakes. I can buy the Formulary without paying you $5.00 annually." In my mind there is no doubt that every member in good standing has a just right to demand, free of charge, a copy of each edition of the Formulary, either as part of the Year Book or as a separate volume. This principle was acknowledged by the leading men of the Association when the Formulary was taken over (see vol. of Proceed. No. 34, p. 165, etc., remarks by Remington and others). This same principle was recognized later by the Association in printing the New York and Brooklyn Formulary, the forerunner of the National Formulary, as a part of the proceedings. If the Formulary is not a part of the proceedings, what is it? The Association by its own actions has always considered it so. The expenses of the Committee on Formulary have been paid from the funds of the Association whenever a bill was presented, and, on the other hand, the accruing profits have been put into the treasury of the Association and used as regular funds. If the Formulary were not an integral part of the proceedings, but something outside or different from the other work of the Association, from where did the financial officers derive the authority to pay for such work and expenses out of the funds of the Association?

It has been the custom and principle of the Association from its beginning to allow the press and publishers to reprint any parts of the Proceedings whenever and wherever they chose. Even the authors of scientific and other papers are not asked permission for such reprints. In fact, it is held out as an inducement to young authors to contribute papers that their writings may be given wide publicity. How can we, in considering this general custom, deny certain publishers the privilege of reprinting the Formulary, while we grant it others? The claim that the Formulary may be used and reprinted by the pharmaceutical press, but must not be reprinted by publishers of text-books for the sake of instruction or education is not only wrong but actually vicious. Neither the Pharmacopœia nor the Formulary is intended nor fit to be used as text-books; to make their contents available for instruction, a rearrangement and proper classification of the subject matter becomes necessary. The schools of pharmacy are supposed to base their instructions on these two books, and any desire or effort to do so and thereby impart knowledge and understanding to our coming pharmaceutical generation should be encouraged and supported by the Association. Authors and publishers of text-books confer a benefit and blessing on the whole profession by giving the formulas as wide a publicity as possible, and a charge for doing so would be a tax on education.

3. By an act of Congress in 1906 commonly called the Pure Food and Drug Act, the Pharmacopœia and the National Formulary have become parts of our national laws. A violation of any of their formulas is a violation of a national law, and there are many cases on record that the courts decided according to this principle. Compilations of certain sets of laws are quite common. One author compiles a book on the laws of internal revenue, the other on real estate, a third on public health, and so forth. All these law books are copyrighted and used extensively in law schools. But no author ever claimed that by compiling such a book he acquired the right of property in the individual laws that he compiled, and that anybody who might wish to reprint them after the publication of his book, must pay him a royalty. He would be laughed out of court with such a contention.

The A. Ph. A. has not only consented to have the Formulary made part of the law, but has asked and worked for such incorporation. Even if a right to the formulas had existed before the passage of this law, such right would have ceased by the action of the Association. No right can be assumed without corresponding duty. If we claim the right of having these formulas considered laws, we thereby undergo the

duty of letting every citizen read, quote, criticize, print and discuss these laws whenever and wherever he wishes.

I am well aware that some leading men in our Association differ from me on this point. Men in general are ready to believe what they hope and willing to consider correct and legal what seems to benefit them. We must learn to free our arguments from hopes and desires, in order to stay on the straight path of logic and right. I once opposed the whole pharmaceutical profession on another similar occasion, and was attacked and abused for years, until the Supreme Court justified my position. Some day the court will do so in this case.

4. The charge of a royalty for the use of the formulas of the National Formulary is unethical and diametrically opposed to the fundamental principles of our Association. Article 1 of our Constitution, which forms our code of ethics, seems to have been forgotten. I invite all who wish to levy this tax on pharmaceutical education to carefully read this article and particularly paragraphs 3, 6 and 7. There is but one argument in favor of this tax: "That we need the money." It is hardly necessary to point out how fundamentally wrong this argument is. Read the Proceedings of 1885 and following years and the remarks of men like Ebert, Dr. Rice, De Forrest, Hallberg, Colcord, and others, who then represented, and lived for ethical pharmacy; notice the emphasis with which all asserted that the National Formulary must not, and never should, be made a source of profit to the Association, that each member should receive a copy, and that non-members might buy it at strictly cost price. Have we sunk so low as to brush aside the ideals of these men and the whole noble, ethical past of our Association by the vile argument: "We need the money"? The adoption of Motion 54, according to my views, is

Contrary to the life and history of our Association,

Contrary to all ethical principles of pharmacy, by levying a tax on education,

Morally and legally indefensible.

For these reasons, I vote "No."

WILLIAM C. ALPERS.

J. W. ENGLAND,
Secretary of the Council.
415 N. 33rd St., Philadelphia, Pa.

A. PH. A. COUNCIL LETTER NO. 28.

PHILADELPHIA, PA., July 20, 1916.

To the Members of the Council:

Motion No. 54 (*Grant of Permission to use the N. F. IV text in "The Practice of Pharmacy," published by J. B. Lippincott Company*) has received a majority of affirmative votes, the vote being 33 for the motion and 1 against.

Motion No. 55 (*Election of Members; Applications Nos. 293 to 314, inclusive*) has received a majority of affirmative votes.

Motion No. 56 (*Election of Members*). You are requested to vote on the following applications for membership:

No. 315. Aristides M. Aliberti, 2032 S. Bouvier St., Philadelphia, Pa., rec. by J. W. Sturmer and F. E. Stewart.

No. 316. Fred. W. Smith, Poplarville, Miss., rec. by J. C. McGee and Gus Kendall.

No. 317. John C. Gleim, 2181 E. 89th St., Cleveland, Ohio, rec. by W. C. Alpers and E. R. Selzer.

No. 318. Elmer Joseph Zickes, 4521 Clark Ave., S. W. Cleveland, Ohio, rec. by W. C. Alpers and E. R. Selzer.

No. 319. Henry George Duerfeldt, Main and Washington, Spokane, Wash., rec. by C. Osseward and C. W. Johnson.

No. 320. Thomas H. Bienz, Kalispell, Mont., rec. by Alex. F. Peterson and Charles E. Mollet.

No. 321. Ben E. Lapeyre, Jr., Gt. Falls, Mont., rec. by Charles E. Mollet and Alex. F. Peterson.

No. 322. Hugh Lee Boyd, Kosciusko, Miss., rec. by J. C. McGee and Gus Kendall.

No. 323. Knud J. Damtoft, 326 State St., Bridgeport, Conn., rec. by G. A. Jamison and J. A. Leverty.

No. 324. Walter Carl Palenschat, 2364 E. 69th St., Cleveland, Ohio, rec. by L. C. Hopp and W. T. Hankey.

No. 325. August Fred Pence, 8135 Superior Ave., Cleveland, Ohio, rec. by L. C. Hopp and W. T. Hankey.

No. 326. Harry Earl Mitchell, 425 E. 112th St., Cleveland, Ohio, rec. by L. C. Hopp and W. T. Hankey.

No. 327. S. Ross Campbell, Cynwyd, Pa., rec. by W. B. Day and J. W. England.

No. 328. Ralph Waldo Morgan, 219 N. Senate Ave., Indianapolis, Ind., rec. by Francis E. Bibbins and Francis A. Federer.

No. 329. John Wilfred Vestal, 402 E. Raymond St., Indianapolis, Ind., rec. by Francis E. Bibbins and W. B. Day.

No. 330. Juan Rosales Imson, No. 6 LaO. and No. 9-11 Mpl. Sts., Tayabas, Province of Tayabas, P. I., rec. by W. C. Alpers and E. R. Selzer.

No. 331. Forest D. Christian, N. E. Cor. Ohio Ave. and Poplar St., Sidney, Ohio, rec. by E. R. Selzer and W. C. Alpers.

No. 332. Hiram Wilson Elliott, Hosp. Stwd., U. S. Navy, U. S. Naval Station, Agana, Guam, rec. by W. B. Day and J. F. Rupert.

No. 333. Frederick C. Mayer, Marquette University, Milwaukee, Wis., rec. by C. W. Johnson and W. B. Day.

No. 334. Herbert M. Lerou, 289 Main St., Norwich, Conn., rec. by C. P. Gladding and J. G. Godding.

No. 335. Harrison E. Purdy, 100 Elizabeth St., Derby, Conn., rec. by C. P. Gladding and J. G. Godding.

No. 336. Samuel Bienstock, 990 Broadway, Hartford, Conn., rec. by C. P. Gladding and J. G. Godding.

No. 337. Otto Herman Mentz, 1057 Belmont Ave., Chicago, Ill., rec. by William Gray and W. B. Day.

No. 338. Herman C. Schuh, cor. 8th and Washington, Cairo, Ill., rec. by W. B. Day and Paul G. Schuh.

J. W. ENGLAND,
Secretary of the Council.
415 N. 33rd St., Philadelphia, Pa.

A. PH. A. COUNCIL LETTER NO. 29.

PHILADELPHIA, PA., August 16, 1916.

To the Members of the Council:

Motion No. 56 (*Election of Members; Applications Nos.* 315 *to* 338, *inclusive*) has received a majority of affirmative votes.

In regard to the adoption of Motion No. 54 (C. L. No. 28), William C. Alpers wishes to announce to the Council that he will appeal from this vote to the Association at the Atlantic City meeting.

The organization meeting of the Cuban Branch of the American Pharmaceutical Association was held July 24, 1916, at the Academy of Sciences of Havana, and the following resolutions were adopted:

Resolved, That the Cuban Branch of the American Pharmaceutical Association extend its salutations to the Council and fellow members of the Association.

Resolved, That the Cuban Branch of the American Pharmaceutical Association extend to the Council its thankfulness for the constitution of the Branch.

Motion No. 57 (*Election of Members*). You are requested to vote on the following applications for membership:

No. 339. Lester LeRoy Buttery, Gonzales, Texas, rec. by R. H. Walker and Wm. B. Day.

No. 340. James W. Wise, Dover, Delaware, rec. by John O. Bosley and Reuben M. Kaufman.

No. 341. Arch Krieg, 1217 Quarrier St., Charleston, W. Va., rec. by Frank H. Freericks and John Uri Lloyd.

No. 342. Miss Angelica Curbelo, Pharm. D., Campanario, No. 41, Havana, Cuba, rec. by Jose Guillermo Diaz and G. J. Fajardo.

No. 343. Raoul D. Keim, 111 N. Market St., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.

No. 344. Lewis Moore Hires, High and Union Sts., Burlington, N. J., rec. by George M. Beringer, Jr., and Edgar R. Sparks.

No. 345. Leland S. P. Turner, 902 E. Bancroft St., Toledo, Ohio, rec. by Waldo M. Bowman and Wm. B. Day.

No. 346. Rudolph L. Meier, 1246 O St., Lincoln, Neb., rec. by E. O. Haschenburger and Wm. B. Day.

No. 347. James William Coppedge, care of W. H. King Drug Co., Raleigh, N. C., rec. by W. W. Horne and E. N. Zoeller.

No. 348. Albert T. Utley, 145 Main St., Norwich, Conn., rec. by Curtis P. Gladding and John G. Godding.

No. 349. Herbert A. Keith, Lake Preston, S. Dakota, rec. by E. C. Bent and Wm. B. Day.

No. 350. Thomas McCoy Watts, Holstein, Iowa, rec. by Wilber J. Teeters and Wm. B. Day.

No. 351. Howard Atkins Winn, Ph. G., 416 W. 11th St., Grand Island, Neb., rec. by L. A. Johnson and H. C. Newton.

No. 352. Adolph Schmidt, 330 5th Ave., McKeesport, Pa., rec. by J. W. England and W. H. Lackey.

No. 353. Charles H. Pinks, 13 W. Main St., Meriden, Conn., rec. by John G. Godding and Wm. B. Day.

No. 354. Luin Burt Switzer, Southport, Conn., rec. by Theodore Weicker and W. C. Alpers.

No. 355. Daniel George Sullivan, Watertown, Conn., rec. by John A. Leverty and Harrison E. Purdy.

No. 356. William S. Denton, 109 W. Main St., Beardstown, Ill., rec. by W. B. Day and Wm. Gray.

No. 357. Harry Noonan, president, The Drug Products Co., Inc., 48 W. 4th St., New York, N. Y., rec. by Wilber J. Teeters and Wm. B. Day.

No. 358. Stanislaus W. Burda, 1363 N. Ashland Ave., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.

No. 359. James Theus Munds, 208 Walnut St., Montclair, N. J., rec. by Harry W. Crooks and Edward A. Sayre.

No. 360. Thomas J. Driscoll, Fallkill Bldg., Main and Washington Sts., Poughkeepsie, N. Y., rec. by Thomas F. Main and Arthur S. Wardle.

No. 361. Carlos Vidal, Phar. D., P. O. Box 416, Cruces, Cuba, rec. by Jose R. Prieto and Jose P. Alacan.

No. 362. Earl Albert Tyler, 116 W. 70th St., New York, N. Y., rec. by Wm. B. Day and J. W. England.

No. 363. F. J. Zuck, Forest City Bank, Lawrence, Kansas, rec. by Wm. B. Day and C. M. Snow.

No. 364. John Gerhard, 643 N. 15th St., Philadelphia, Pa., rec. by George M. Beringer and J. W. England.

No. 365. Louis L. Staehle, 169 S. Orange Ave., Newark, N. J., rec. by George M. Beringer and J. W. England.

No. 366. Alexander Seidler, 21-23 Ferry St., Newark, N. J., rec. by George M. Beringer and J. W. England.

No. 367. Frank B. Winski, Stamford, Conn., rec. by E. H. Wisner and G. D. Timmons.

No. 368. S. M. Miller, Big Run, Pa., rec. by G. D. Timmons and E. H. Wisner.

No. 369. Chester E. Garl, Edwardsburg, Mich., rec. by W. O. Speer and G. D. Timmons.

J. W. ENGLAND,
Secretary of the Council.

415 N. 33rd St., Philadelphia, Pa.

A. PH. A. COUNCIL LETTER NO. 30.

PHILADELPHIA, PA., August 24, 1916.

To the Members of the Council:

Motion No. 58 (*Election of Members*). You are requested to vote on the following applications for membership:

No. 370. Emil Roller, Ph.G., 574 Amsterdam Ave., New York, N. Y., rec. by Otto Raubenheimer and Frank L. McCartney.

No. 371. Robert Oscar Hurst, 391 Jarvis St., Toronto, Ont., Can., rec. by Charles F. Heebner and Alexander Stewart.

No. 372. Oscar Kellogg Whipple, Broad and Fayette Sts., Bridgeton, N. J., rec. by George M. Beringer and George M. Beringer, Jr.

No. 373. Leon A. Taylor, 100 Clifton Ave., Lakewood, N. J., rec. by George M. Beringer and George M. Beringer, Jr.

No. 374. William H. Owens, 341 Communipaw Ave., Jersey City, N. J., rec. by George M. Beringer and George M. Beringer, Jr.

No. 375. Albert Burtis Johnson, 410 River Ave., Point Pleasant, N. J., rec. by George M. Beringer and J. W. England.

No. 376. Edward D. Holmes, Havana, N. Dakota, rec. by W. P. Porterfield and Wm. B. Day.

No. 377. Oscar Hallenberg, 66 Broadway, Fargo, N. Dakota, rec. by W. P. Porterfield and Wm. B. Day.

No. 378. John H. Vold, 26 S. 3rd St., Grand Forks, N. Dakota, rec. by W. P. Porterfield and Wm. B. Day.

No. 379. John W. Needham, Finley, N. Dakota, rec. by W. P. Porterfield and Wm. B. Day.

No. 380. Max Henry Strehlow, Kindred, N. Dakota, rec. by W. P. Porterfield and Wm. B. Day.

No. 381. Charles F. Gorman, 142 Asylum St., Hartford, Conn., rec. by Theodore Weicker and W. C. Alpers.

No. 382. Clark H. W. Newton, 63 Bank St, Waterbury, Conn., rec. by Theodore Weicker and W. C. Alpers.

No. 383. Bruno E. Hockert, 2 Holcomb St., Hartford, Conn., rec. by Curtis P. Gladding and John Godding.

No. 384. Francis Henry Shaffer, care of Strong, Cobb and Co., 206 Central Viaducts, Cleveland, Ohio, rec. by H. M. Whelpley and J. W. England.

No. 385. G. Ellyson, 11th and High Sts., Des Moines, Iowa, rec. by Wilber J. Teeters and Wm. B. Day.

No. 386. Robert Francis McDonald, M.D., 391 West End Ave., New York, N. Y., rec. by Otto Raubenheimer and Frank L. McCartney.

No. 387. Louis Spencer Levy, 80 Maiden Lane, New York, N. Y., rec. by Otto Raubenheimer and Frank L. McCartney.

No. 388. Clarence C. Sneider, 243 S. 9th Ave., Mt. Vernon, N. Y., rec. by Gustave Horstmann and Jacob Diner.

No. 389. Harry J. Novack, M.D., 595 Willoughby Ave., Brooklyn, N. Y., rec. by Otto Raubenheimer and Frank L. McCartney.

No. 390. Isidore Jacob Blumenkranz, 234 Rivington St., New York, N. Y., rec. by Charles W. Lehman and J. Leon Lascoff.

No. 391. Leon S. Lord, 267 Jewett Ave., West New Brighton, N. Y., rec. by Charles W. Lehman and J. Leon Lascoff.

No. 392. Max Hansburg, 489 3rd Ave., New York, N. Y., rec. by J. Leon Lascoff and Charles W. Lehman.

No. 393. Richard A. Austin, Cairo, N. Y., rec. by J. Leon Lascoff and Wm. L. DuBois.

No. 394. Elmer E. Chilson, 326 Monroe Ave., Rochester, N. Y., rec. by Charles W. Lehman and J. Leon Lascoff.

No. 395. Franklin W. Halbkat, Webster, South Dakota, rec. by E. C. Bent and Wm. B. Day.

No. 396. William Paul Lenocker, Bushnell, S. Dakota, rec. by E. C. Bent and W. B. Day.

No. 397. Albert D. Cooley, Summer & Ocean Aves., Seaside Heights, N. J., rec. by F. R. Stutzlen and David Strauss.

J. W. ENGLAND,
Secretary of the Council.
415 N. 33rd St., Philadelphia, Pa.

MEMORANDA.

Resigned from the A. Ph. A., since July 18, 1916.

Treasurer Whelpley reports the following:
Stallings, R. E., Atlanta, Ga.
Seymour, James, Denver, Colo.
Matthews, C. E., Chicago, Ill.
Burvant, E. J., New Orleans, La.
Schiess, B. F., St. Louis, Mo.
Gordon, E., Bronx, New York, N. Y.
Bowie, R. T., Atlanta, Ga.
Marwell, O. A., Detroit, Mich.
Harrah, J. W., Minneapolis, Minn.
Trolinger, E. F., Nashville, Tenn.
Sister Superior, Columbus, Ohio.

LETTER TO THE EDITOR.

252 York Street, New Haven, Connecticut.
September 9, 1916.

To the Editor of the Journal of the American Pharmaceutical Association.

Dear Sir:

On page 804 of the August issue of your Journal in an article by Wilbur L. Scoville, are some statements which, if allowed to pass without criticism, will create a general belief in what is contrary to fact. I refer to this paragraph, namely:

"The Pharmacopœia is an authority on therapeutics, and its scope is controlled by therapeutic considerations, . . . The Pharmacopœia is controlled by the 'regular' school of practice, but the National Formulary makes no distinction between allopaths, homeopaths, osteopaths, chiropractors, or any other school of practice."

I cannot believe that Mr. Scoville intended to mislead the reader, but he cannot be at all cognizant of the facts, and he himself must be glad to withdraw what is manifestly untrue.

In the first place, the Pharmacopœia is not an authority on therapeutics, and it was repeatedly and distinctly so stated and so urged in various discussions held by the Sub-committee on Scope, a component part of the Revision Committee of the Pharmacopœia. I was a strong advocate that a drug which was therapeutically useless should not enter the ninth revision of the United States Pharmacopœia, but I was repeatedly and permanently outvoted, those who differed from me voting for the principle that the United States Pharmacopœia was "not a book on therapeutics." The Sub-committee on Scope, consisting of nine members, passed a "guiding principle" that a drug to be admitted to the United States Pharmacopœia should be of "therapeutic usefulness" or of "pharmaceutic necessity."

On the floor of the Pharmacopœial Convention held in 1910, it was stated that it was the duty of physicians to select the drugs, and the duty of pharmacists to decide how the preparations of the drug should be made. Neither was this obviously correct division of labor lived up to, nor were the "guiding principles" of the Sub-committee on Scope lived up to.

Of the fifty members of the Revision Committee only six were physicians engaged in the practice of medicine, and four of these physicians were members of the Sub-committee on Scope. Basing their recommendations on the fact that very many drugs and preparations in the Pharmacopœia of 1900 were therapeutically useless, this Sub-committee on Scope recommended the deletion of more than 150 drugs and preparations, and more than half of these drugs and preparations were recommended for the Pharmacopœia by the Executive Committee, only one member of which was a practising physician. This all-powerful Executive Committee also introduced into the Pharmacopœia drugs that had not even been passed upon by the Sub-committee on Scope. In other words, the votes, advice and decision of the hard-working Sub-committee on Scope, aiming at therapeutic usefulness of drugs that should enter the new Pharmacopœia, were largely turned down, over-ruled and over-voted by the Executive Committee (an all-powerful committee that passed on all recommendations of the sub-committees), and only one member of this Executive Committee is a practising physician, and therefore the only one qualified to pass upon the therapeutic value of a drug or preparation. Hence the reasons that more than half of the drugs and preparations recommended for deletion by the Sub-committee on Scope, and introduced into the Pharmacopœia by the Executive Committee, in spite of such deletion recommendation, were not therapeutic reasons. Therefore the book is *not* an authority on therapeutics and was not intended to be such. In fact, it is a book of valuable therapeutic drugs interspersed with several hundred drugs and preparations that are either useless or inferior to the few that are of value.

A drug, to have therapeutic value, must have some recognized activity on the human body. A very large number of those in the new Pharmacopœia have no such activity. Even the doses of the drugs are not authoritative, only suggestive. The dose of a drug is enough to produce the results required, more or less than the dose suggested by the Pharmacopœia.

That the Pharmacopœia is controlled by so-called "regulars" is another statement that is not a fact. Only four members of the Executive Committee, which committee is *entirely responsible* for the contents of the Pharmacopœia, have the degree of M.D. Hence the book represents the drugs and preparations that the expert drug men in all branches of the drug traffic desire to have in the book.

Also, one cannot well see how those who use no drugs in the treatment of disease could be interested in a book on drugs. Therefore, to intimate that such were shut out of the United States Pharmacopœia is a reflection on their supposedly drugless practice, and criticism cannot be made of the Revision Committee, thirty-two of whose fifty members are drug experts.

Exactly how the so-called osteopaths, their pseudo friends, the chiropractors, and "other schools of practice," perhaps mental and Christian scientists, *i.e.*, drugless treaters of disease can or will find the fourth revision of the National Formulary useful, is a question in psychology. And also it should be remembered that the state medical laws prohibit these sects from giving or prescribing drugs.

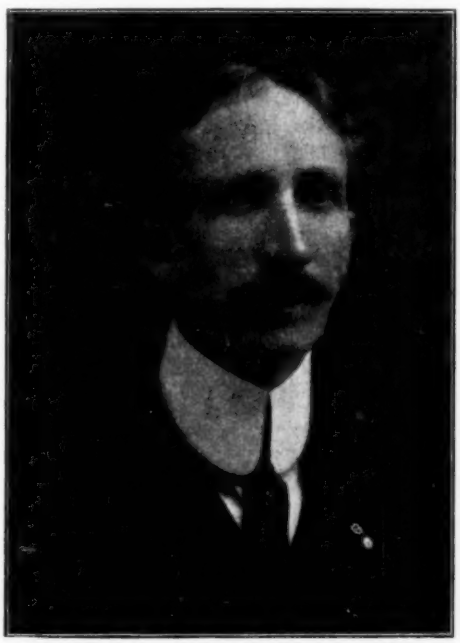
May I be pardoned for stating my right to call attention to these obvious mistakes of Mr. Scoville. I have taught materia medica for twenty-five years, have written several books on therapeutics; am a member of the Revision Committee of the Pharmacopœia, of the Sub-committee on Scope, and of the Sub-committee on Dosage.

Yours very truly,
OLIVER T. OSBORNE.

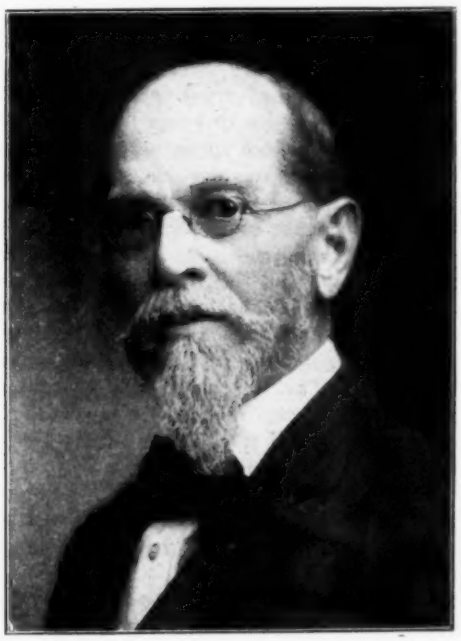
SCHEDULE B STAMP TAX REPEALED.

Schedule B of the emergency war revenue act has been repealed by the omnibus revenue bill, which has just received the President's signature, taking effect Saturday morning, September 9. The revenue bill also repeals the documentary stamp taxes included in Schedule A of the emergency war revenue act, including all bills of lading, express receipts, telephone and telegraph messages.

Manufacturers are now free to remove from their factory premises all goods included in Schedule B without payment of tax. Collectors of internal revenue have been instructed to assist manufacturers in the preparation of claims for the redemption of all unused stamps, and canceled stamps which have not been attached to goods. Refunds will also be allowed for stamps attached to goods which have not been removed from factory premises, provided the individual packages can be exhibited to deputy collectors in order that *each stamp* may be specially canceled. As to goods which have been removed from factory premises, the government holds that as the tax accrues upon removal no refunds can be made.



WILBER J. TEETERS, Iowa City, Ia.
Secretary, American Conference Pharmaceutical Faculties.



J. O. BURGE, Nashville, Tenn.
Elected Honorary President, American Pharmaceutical Association.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.
Committee on Publication: J. W. ENGLAND, *Chairman;* G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, J. H. BEAL, and the Editor-in-Chief of the Journal, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*
Office of Publication, 253 Bourse Building, Philadelphia, Pa.

SYMPOSIUM ON OCCUPATIONAL DISEASES AT CHEMICAL SOCIETY CONVENTION.

At the meeting of the American Chemical Society in New York on September 25 to 30, there will be conducted a symposium on occupational diseases, presided over by Professor Charles Baskerville, head of the department of chemistry of the College of the City of New York.

The symposium will consider the chemical trades, prophylaxis in chemical industry, diseases incidental to work in aniline and other coal-tar products, cedar lumber, mines, explosives, and a general discussion by the leading authorities of the country. These will include Drs. W. Gilman Thompson, F. L. Hofman, J. W. Schereshewsky, G. P. Adamson, H. N. Benson, W. A. Lynott, Alice Hamilton and Mr. J. B. Andrews.

A NEW BUNSEN BURNER.

A recent issue of the *Chemiker Zeitung* contains a description of a new form of Bunsen burner for which special advantages are claimed. There are two concentric tubes mounted on a suitable base, and the air is drawn through the annular space between the tubes, being preheated in its passage. Gas is supplied in the usual way to a jet at the base of the inner tube, but the amount of gas admitted can be regulated by a pointed screw that controls the gas passage before the jet is reached. The air supply is adjusted by screwing the outer tube up or down, thus opening or closing the passage at its base, connecting with the inner burner tube. Both tubes are opened out, cone shaped at both top and bottom. This form of burner gives a short, thick flame that completely envelops a crucible; but if a long, slim flame is desired, a short length of straight cylindrical tube is slipped into the inner tube of the lamp.

A RAPID METHOD FOR THE ESTIMATION OF FAT IN POWDERS.

S. P. Phillips in the *Journal and Pharmacist* reports on a rapid method for the estimation of fat in powders and which was primarily devised for the estimation of fat in cocoa. It is, however, applicable to any substance which can be freely divided. The process consists of extracting the fat from a known quantity of the substance with trichlorethylene, and of determining the fat in an aliquot part of the solution. Such a quantity of the substance as is likely to contain 1.3 to 3.5 Gms. of fat is weighed by difference into a six-ounce wide-mouthed, stoppered bottle (about 3½ inches high to the shoulder). One hundred mils of solvent at room temperature is added from a pipette, and the mixture is thoroughly shaken. The filter used is made by folding two filter papers, 9 cm. in diameter, together into the shape of a Soxhlet thimble and tying them into a small perforated cork (hole about one-eighth inch) which is then fixed on to the end of a 20-Cc. pipette. Filtration is hastened by pressure applied to the bottle by means of a tube passed through a bung, which also carries the pipette. In this way 20 mils of a clear solution are removed and the fat in it is determined on evaporation of the solvent. The total weight of fat in the substance taken is determined by multiplying by a factor, which varies according to the weight of fat obtained. Thus, if 0.3 Gm. is obtained, the factor is 5.04; if 0.5 Gm., 5.11; if 0.7 Gm., 5.165.

THE TOXICITY OF ARSENOUS AND ARSENIC ACIDS.

In a recent issue of the *Journal of the A. M. A.*, an editorial stated that compounds of arsenic are becoming so prominent in therapy, and the types of arsenic products for use in medicine have become so diverse, that any

information bearing on their possible mode of action should be welcome. In further comment the article states that arsenic action is not due to the element, but to the ion, of arsenous acid, H_3AsO_3. Organic arsenic compounds in which the metallic atom is attached direcly to carbon are only feebly toxic. In the course of time, within the body they seem to yield more or less arsenous acid, a reaction which may suffice to explain any pharmacologic potency possessed by the organic derivatives. It is a somewhat unexpected fact that the closely related arsenic acid, H_3AsO_4, its anhydride and its salts are far less poisonous than is arsenous acid. This statement has now and then been disputed, but only recently again substantiated at the pharmacologic institute of the University of Berlin by Joachimoglu. The relatively greater toxicity of arsenous in comparison with arsenic acid could be demonstrated by the proportion of 10:6 in the case of the lethal dose required for intravenous injection in animals. Perfusion experiments with isolated frogs' hearts indicated the arsenous compounds to be 300 times as harmful as those of arsenic acid. In the case of the isolated intestine the contrast, though plain, was not equally striking. This has raised the question why there should be a marked disproportion in the relative toxicity of comparable quantities of arsenic and arsenous acids, depending on the mode in which the test is made. The explanation proposed is as follows: The toxicity of the arsenic acid depends on the reducing power of the tissues with which it comes into contact. By this means it is converted into the very poisonous arsenous compound. Some individual organs or tissues have comparatively slight reducing potency. In the isolated heart, for example, arsenic acid exhibits little toxicity. Throughout the living organism as a whole the reduction of arsenic acid appears to be far more readily accomplished; hence, after intravenous administration of the ordinarily less nocuous derivative, it may become more toxic so promptly by conversion to arsenous acid that the real difference between these related arsenic derivatives is no longer conspicuous. This may also explain some of the uncertainty or confusion which has existed in the past in respect to the comparative action of the two substances.

IMPROVING NEGATIVES FOR PRINTING.

Edgar Senior in *Knowledge* states that negatives which from faulty development or other causes are more or less imperfect in some parts may be considerably improved in many ways. For instance, suppose that the subject is one in which a heavy mass of foliage occurs in the foreground, together with a well-lit distance. Now in order to represent the distance correctly in the negative the foreground in many cases is almost entirely devoid of detail, and is shown in the print as a heavy black mass. In such a case, if the negative is coated (on the glass side) with matt varnish, containing a small amount of iodine dissolved in it (the quantity depending upon the circumstances of the case), heavy shadows in negatives can be made to print much lighter and the results improved to a great extent. The varnish, after it is applied, will dry in a few minutes, and then over the parts not required to be lightened it is removed with a penknife or a piece of rag, moistened with a little methylated spirit of benzole. The same means may be applied in the case of portraits and groups, only greater care is required in scraping away the varnish from the parts where it is not needed in order to prevent any marks from showing. Portraits taken out of doors frequently show very heavy shadows under the eyebrows and chin: these may be considerably lessened by applying a little color (either red or blue) on the glass side of the negative, and then dabbing it with the finger, so as to form a kind of stipple caused by the texture of the skin. If carefully applied, the method is very satisfactory, and will tend greatly to reduce the heaviness of such shadows.

OBITUARY

DAVID STRAUSS.

Another champion for better pharmacy and for higher education passed away on Saturday, August 19th. Taking his first plunge in the ocean at Squan Beach, Manasquan, N. J., on the first day of a well-earned vacation, David Strauss was swept away by the undertow, and after a series of mishaps in the attempts of his rescue, namely the breaking of a rope and the upsetting of a boat, his body was recovered.

Born in Elizabeth on October 15, 1866,

the son of Louis Strauss, David attended the schools in his native town, entered pharmacy and graduated from the New York College of Pharmacy in 1888, as a member of the celebrated "Blizzard Class." The New Jersey "trio" of that class were Strauss, of Elizabeth; Raubenheimer, of Irvington, and Reed, of Long Branch. In 1904 David Strauss bought the Garrigan Pharmacy, at the corner of Springfield Avenue and High Street, Newark, and became one of the most widely-known druggists in the State. He worked exceedingly hard for the betterment of trade conditions, and during the administration of Sheriff Frank Sommer, of Essex County, he gave valuable aid in the crusade against cocaine traffic.

In association work, David Strauss was particularly active in the New Jersey Pharmaceutical Association, which he joined in 1898. He did valuable work on the membership committee and also on the legislation committee, making frequent trips to Trenton to secure the passage of a new pharmacy law. He was a forceful speaker and the writer remembers with pleasure the many strong arguments which Strauss brought forth on various occasions. He served as president of the New Jersey Pharmaceutical Association during 1912–13.

David Strauss was appointed a member of the New Jersey State Board of Pharmacy in 1904, and was reappointed in 1909, and again in 1914. He was elected treasurer in 1907 and became president of the Board in 1913.

He joined the American Pharmaceutical Association in 1910, and he looked forward with pleasure to attending the Atlantic City Convention this year. Among his literary contributions we want to point out his Presidential Address at Allenhurst, published in Proceedings, N. J. Ph. A., 1913, and his article "Pharmacy is *not* going backward, but the character of some of the men is sadly deteriorating," published in *Practical Druggist*, April, 1913, pp. 23 and 24.

As a citizen, David Strauss was connected with many building and loan associations, with Beth Israel Hospital and the Hebrew Benevolent Association in Newark. He was also a member of Tyrian Lodge of Elizabeth. The funeral services were held at his home, 450 High Street, Newark, Rabbi Sol. Foster officiating. He is survived by his widow and his daughters, Mina and Mrs. Jacob Harris.

David Strauss will be missed by his many friends, especially by the members of the New Jersey Pharmaceutical Association and his classmates of the "Blizzard Class." He will forever be remembered by the New Jersey State Board candidates for his friendly manners and his encouraging ways. Let us hope that his words "Pharmacy is *not* going backward" will remain true.

Peace to his ashes. O. R.

THEODORE G. E. OTTO.

Theodore G. E. Otto, aged 53 years, member of the American Pharmaceutical Association, died August 6, 1916, at his home in Columbus, Ind.

He was born in Ripley County, Indiana, January 7, 1863, the son of Frank E. and Marie T. Otto. He was educated in the public schools of Friendship, Indiana, and the Lutheran school at Farmers' Retreat. In 1877 he entered the Friemelt Drug Store in Cincinnati. Later he attended the Cincinnati College of Pharmacy, graduating in 1883. The same year he came to Columbus and bought the drug store at Fourth and Washington Streets, in which store he successfully conducted his business until the time of his death.

Mr. Otto was the first member named for the Indiana Board of Pharmacy, and was successively reappointed. He was a member of the school board of his home city and also trustee of Wittenberg College, Springfield, Ohio. He was active in fraternal circles.

Mr. Otto is survived by his widow and two daughters.

SOCIETIES AND COLLEGES

THE 1916 PHARMACEUTICAL ASSOCIATION MEETINGS.

The conventions of the American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy were successful in every respect. The attendance was not up to the expected for the reason that the contemplated railroad strike deterred many from starting on their journey, fearing that their return would be delayed.

The activities are reported elsewhere, and here it should be stated that the entertainment features were under the supervision of Chairman W. L. Cliffe who was tireless in his efforts.

The arrangements of the Atlantic City meeting of the American Pharmaceutical Association were as near perfect as could be expected, and here the preparations and conduct were in charge of Local Secretary Charles Holzhauer. The expression was general that the arrangements were well supervised and no complaint was made. These brief references are chiefly in acknowledgment of the services of these faithful members, who, with their assistants, contributed largely to the enjoyment and comfort of the visitors. A larger number of members were added to the membership of the American Pharmaceutical Association during the past year than ever in the history of the Association, approximating 450.

FIFTY-THIRD MEETING OF THE AMERICAN CHEMICAL SOCIETY, AND THE CHEMICAL EXPOSITION.

New York City, September 25–30.

The Second National Exposition of Chemical Industries will open Monday afternoon, September 25, at 2 o'clock.

The official opening of the American Chemical Society meeting will take place at 10 o'clock Tuesday morning, September 26, at the Horace Mann Auditorium, Columbia University, Broadway and 117th Street.

The Second National Exposition of Chemical Industries is already an assured success, two whole floors of the large Grand Central Palace having already been engaged, with prospect for the third floor. Practically all the large chemical industries of America will have exhibits which will offer an unexcelled opportunity for study to American chemists. There will be no entrance fee charged to members of the American Chemical Society. The member's badge obtained at the registration desk will admit him at all times.

The American Chemical Society, the Chemists' Club, American Institute of Mining Engineers, American Electrochemical Society, and the Technical Association of the Pulp and Paper Industry will all have booths at the exposition. The Bureau of Commercial Economics is collaborating in arrangements for a motion picture program at the exposition. The exposition will also have two large sections given over to the "Southern Opportunity" that awaits the industrial chemist, and a large section of exhibits for "The Paper and Pulp Industry."

DIVISION OF PHARMACEUTICAL CHEMISTRY.

Secretary Geo. D. Beal, of the Division of Pharmaceutical Chemistry, American Chemical Society, has sent out the following letter of interest to pharmacists:

The next meeting of the American Chemical Society will be held in New York City during the week of September 25th. All titles of papers to be read at the meetings of the Division of Pharmaceutical Chemistry should be in the hands of the Secretary not later than September 8th.

At the Urbana meeting this Division made a splendid showing. It not only had one of the longest programs in its entire history, but every paper on the program was read in full, and by one of the authors. Let us see if this record cannot be duplicated at this coming meeting.

The Secretary has no suggestions to make regarding titles for papers, as in his experience all of the papers presented to the Division have been full of merit. He does wish to ask, however, that all members presenting papers will see that abstracts are placed in his hands at the time of the meeting. Two of the authors of papers at the last meeting have not yet submitted their abstracts.

NATIONAL DRUG TRADE CONFERENCE LOOKING FOR DRUGGISTS WITH GRIEVANCES.

The National Drug Trade Conference is sending out circular letters in the interest of its work in seeking complaints of alleged malfeasance, substantial errors of judgment and improprieties of any sort on the part of both Federal and State inspectors and agents in the enforcement of the pure food and drug, narcotic and similar laws. A special committee was appointed at the meeting of the Conference in December, 1915, composed of many well-known pharmaceutical specialists to investigate the whole matter of the interpretation and enforcement of the food and drug laws, and this committee asks the co-operation of every jobber, wholesaler, manufacturer and retailer that real evils may be remedied. To quote from a recent cir-

cular of the committee as illustrating the work being done:

"A recently issued State bulletin announces that the tincture lemon peel, U. S. P., of a prominent manufacturer was 'two-fifths standard strength. Misbranded and adulterated.' The name of a reputable druggist as well as the manufacturer's was published in connection. Inquiry disclosed that the libelous statement was based on the supposition that tincture lemon peel, U. S. P., should contain the amount of oil required of lemon extract."

This is a sample of the abuses that are sought to be remedied by the scheme explained in the enclosed circular.

John C. Wallace, of Newcastle, Ind., is president of the Conference, and Charles Woodruff, of Detroit, Mich., secretary.

NORTHWESTERN UNIVERSITY SCHOOL OF PHARMACY.

The new third year of the Pharmaceutical Chemist course, announced last fall, will be offered this year in order to give several graduates of last year's Ph.G. class the opportunity of continuing the course. Additional work in drug assaying and commercial microscopy is offered.

Professor M. A. Miner has just returned from an extended trip through the west, visiting alumni in Denver, Salt Lake City and the cities on the Pacific Coast. He reports a most enjoyable trip.

PHILADELPHIA COLLEGE OF PHARMACY.

The Department of Pharmacy, Medico-Chirurgical College of Philadelphia was included in the merger of the latter institution with the University of Pennsylvania. Since then a consolidation of the pharmacy department with the Philadelphia College of Pharmacy has been effected. Prof. J. W. Sturmer becomes vice-dean of the Philadelphia College of Pharmacy and others of the former faculty of Medico-Chi have also been placed on the teaching staff.

In connection with the annual meeting of the American Pharmaceutical Association, in Atlantic City, there was held a function of much interest to the friends of Professor Samuel P. Sadtler, who had retired after 45 years of teaching, 38 of them in the Philadelphia College of Pharmacy. It has been the custom for years to hold a P. C. P. Alumni Dinner during the A. Ph. A. Convention; this year's dinner was a bigger affair than any of its predecessors, as it was a testimonial to Professor Sadtler, whose many friends, both in and out of the Alumni Association, were glad of the opportunity to do him honor.

The dinner was given at the Hotel Traymore, Atlantic City, Wednesday, September 6th, at 5.15 P.M., a preliminary reception being held at 5.00 P.M.

An exhibition at the Philadelphia College of Pharmacy of modern scientific pharmacy contrasted with pharmacy of a century ago has created much interest, not only with the members of the several pharmaceutical associations, druggists generally, but the laity as well. The exhibit includes a drug store of 1812, together with many interesting historical exhibits, modern pharmaceuticals and chemicals, a professional pharmacy fully equipped with scientific laboratories and ready to co-operate with the medical profession in the modern practice of medicine.

ST. LOUIS COLLEGE OF PHARMACY.

The department of practical pharmacy in the St. Louis College of Pharmacy will hereafter be in charge of Prof. Francis Hemm, as successor to Prof. James M. Good, who retires from active work in the college, and who has been made Emeritus Professor of Pharmacy.

Prof. Hemm will be aided in the lecture and laboratory work by Associate Professor of Pharmacy, Leo Suppan, and in the division of Commercial Pharmacy, by Associate Professor Gustav Rehfeld, Ph.D.

The other departments remain in charge of the old and well-known professors, in their respective branches.

THE UNIVERSITY OF ILLINOIS SCHOOL OF PHARMACY.

Last December the University of Illinois purchased for its School of Pharmacy, property at the corner of Wood and Flournoy Streets, Chicago, including eight city lots, aggregating 201 by 125 feet, and improved by two substantial buildings. One of these is a four-story college building, containing a large auditorium, several lecture and recitation rooms, as well as offices, a microscopical laboratory, and several smaller lab-

oratories. This building was formerly occupied by a medical college. The second building was constructed for a hospital and is now being remodelled as a laboratory building, in which will be located the qualitative analytical laboratory, the laboratory for organic chemistry and the pharmaceutical laboratory. The college building was occupied by the school on June 1st.

The trustees of the university have appropriated $32,000 for refitting the buildings. The laboratories will be supplied with electricity, gas, compressed air, vacuum, and hot and cold water.

These buildings will be used by the School of Pharmacy exclusively.

STATE ASSOCIATION MEETINGS.

MONTANA.

President J. W. Corwin, in his address at the Missoula meeting, spoke for the encouragement of the College of Pharmacy of the University of Montana, and as a result the Association went on record in favor of an appropriation of $25,000 for the erection of a building with proper equipment. The resolution will be brought before the legislature and a strong effort made to secure the appropriation.

Addresses were made by President F. C. Scheuch and Chancellor Elliott, of the State university; A. E. Spriggs, of Helena; J. W. Corwin, of Park City; Dr. W. F. Goggswell, of Helena, secretary of the State board of health; Dr. E. H. Ehlert, biologist, of Minneapolis; and President Henry Suzzalo, of the University of Washington.

The following officers were elected for the ensuing year: President, Louis Dreibelbis, of Butte; vice-presidents, A. C. Roecher, of Bozeman, Henry St. John, of Victor, and Albert Doull, of Butte; secretary, J. A. Riedell, of Boulder; treasurer, C. R. Fuller, of Anaconda.

J. W. Corwin, of Park City, was elected delegate to the meeting of the American Pharmaceutical Association at Atlantic City. The Women's Auxiliary elected the following officers:

President, Mrs. C. B. Hoskins, Butte; first vice-president, Mrs. W. R. Montgomery, Butte; second vice-president, Mrs. Emil Starz, Helena; secretary-treasurer, Mrs. C. E. Mollet, Missoula.

The 1917 meeting will be held in Butte.

NORTH DAKOTA.

The thirty-first annual meeting of the North Dakota Pharmaceutical Association met at Fargo, August 1. Thomas H. Potts, secretary of the N. A. R. D., was present and delivered an address on the laws affecting the drug trade. The address of President J. W. Needham reviewed the drug trade of the country in general and conditions of North Dakota in particular.

The officers for the ensuing year elected at the convention follow: President, A. A. Bradley, Williston; 1st vice-president, Peter Mergens, Fairmount; 2nd vice-president, J. H. Vold, Grand Forks; secretary-treasurer, W. S. Parker, Lisbon; local secretary, J .H. Vold, Grand Forks; executive committee, J. S. Miller, Rugby; W. J. Orchard, Dickinson; and Homer L. Hill, Sutton.

The ladies' auxiliary, in session at the same time, elected as president, Mrs. Louise Jacobson, of Hankinson, and secretary and treasurer, Mrs. Peter Mergens, of Fairmount.

The travelers' auxiliary chose as president, M. Simonstad, of Devil's Lake, and secretary and treasurer, G. Hammond Brown, of Minneapolis, Minn.

The meeting next year will be held at Grand Forks.

SOUTH CAROLINA.

The fortieth annual convention of the South Carolina Pharmaceutical Association was held July 24th and 25th at Isle of Palms.

Many members were prevented from attending by the difficulty of travel due to the great storm which swept that part of the country early in the month.

Many papers pertaining to pharmacy were read and discussed and a report of the work done by the laboratory of the Medical College of the State of South Carolina was made by Dr. W. H. Zeigler.

The officers elected for the ensuing year were: President, J. M. Oliver, of Orangeburg; vice-presidents, I. A. Rigby, of Spartanburg, and D. Tilden Riley, of Florence; secretary and treasurer, Frank M. Smith, of Charleston.

The meeting next year will be held at Greenwood.

SOUTH DAKOTA.

The thirty-first annual convention of the South Dakota Pharmaceutical Association was held at Mitchell, August 8.

President H. A. Keith, of Lake Preston,

discussed general business conditions and the effect of the European war on various drug markets and prices. He spoke of the place of women in pharmacy and made suggestions as to changes in the pharmacy law.

Officers were elected for the ensuing year as follows: President, J. A. Pool, of Redfield; vice-presidents, W. P. Loesch, of Bruce, and Otto Ross, of Conde; secretary, E. C. Bent, of Dell Rapids; and treasurer, A. A. Woodward, of Aberdeen. F. W. Halbkat, of Webster, F. W. Bobb, of Mitchell, and D. X. F. Dexter, of Canton, will be recommended to the governor to fill a vacancy on the board of pharmacy.

The women's auxiliary chose Mrs. Hansen as president for the year.

Next year the meeting will be held at Watertown.

WYOMING.

The second annual meeting of Wyoming Pharmaceutical Association was held at Caspar. In the absence of President F. G. Huffman, Vice-president A. E. Roedel presided, and R. G. Cook acted as secretary.

Following a prolonged discussion the president was authorized to appoint a committee to draft a resolution recommending an amendment to the present law covering the sale of drugs and toilet articles by peddlers.

Officers for the ensuing year were elected as follows: President, Andrew E. Roedel, of Cheyenne; vice-presidents, Wilson S. Kimball, of Caspar, and C. B. Gunnell, of Evanston; secretary and treasurer, Ray J. Cook, of Caspar.

The meeting next year will be held August 5th and 6th, at Saratoga.

THE PHARMACIST AND THE LAW

ENGLAND PLACES BAN ON COCAINE AND OPIUM.

The British Government has brought into force very drastic regulations governing the importation and sale of cocaine and opium. This has been induced by an extensive surreptitious traffic in cocaine to soldiers who are stated to have acquired the habit of taking the drug from members of the Canadian expeditionary forces. With such a large number of men under arms the authorities have felt it incumbent on them to take the most stringent measures of repression. The importations of cocaine and opium are now prohibited by proclamation.

The opium habit is much practised in this country and the provision of opium in the proclamation is said to have been included as an aid to the authorities in stopping the extensive smuggling of opium to China and America. Regulations also issued deal with the distribution of cocaine and make it an offense to be in possession of the drug unless under stated conditions. The gift of the drug equally with the sale now becomes an offense.

FLUIDOUNCE STATEMENT UNDER HARRISON LAW AMENDED AT INSTANCE OF N. W. D. A.

The Treasury Department, at the request of the National Wholesale Druggists' Association, has so amended Treasury Decision 2292, of January 31, 1916, as to remove existing uncertainty with respect to the method to be employed in stating quantities of liquid preparations ordered on official forms authorized by the Harrison Narcotic Law. The difficulty has been that under the law dealers in ordering pints, quarts and gallons of goods were obliged to state the total number of fluidounces in the quantity ordered—if ordering three pints the dealer would be forced to add the equivalent, 320 fluidounces. The amended sections bearing upon this regulation are as follows, and were effective on and after August 17:

In entering items calling for narcotic preparations on the order forms issued by the Commissioner of Internal Revenue, in accordance with the provisions of section 2 of the act of December 17, 1914, the quantity of narcotic drug to the fluidounce, where put up in packages of fifteen ounces or less, shall be indicated in ounces, and where put up in

packages containing sixteen ounces or more, may be entered in pints, quarts or gallons, provided the number of each and not the aggregate quantity of these units in a higher unit is entered on these order forms.

Where these order forms call for preparations or remedies in solid, powder, or other than liquid form, the quantity in ounces should be entered thereon, or if in tablet, pill, ampule or suppository form, the units or totals thereof need only be stated. The name of the particular narcotic drug in such preparations or remedies, tablets, pills, ampules or suppositories should be entered on these forms.

SEEKING TO AMEND THE PENNSYLVANIA ANTI-NARCOTIC LAW.

It is contemplated to amend the law applying to narcotics in Pennsylvania by making unauthorized possession of narcotic drugs a crime, whether proof of illicit sales is obtained or not. Also to provide a State institution to which habitues will be sent and there receive medical attention.

BILL TO LEGALIZE MAILING OF POISONS.

The National Association of Manufacturers of Medicinal Products, through its legislative committee, has introduced in Congress a bill to amend section 217 of the United States Criminal Code to permit the mailing of poisons. Charles M. Woodruff, secretary of the Association, explains the bill as follows:

"This bill introduced at the instance of the National Association of Manufacturers of Medicinal Products is comprehensive in that it relieves science, art and industry generally, as well as pharmacy and medicine from a deplorable condition respecting the mails which has existed for three or four years back.

"It should be borne in mind that the amendment to criminal section 217 affects only poisons and articles and compositions containing poison, which are not outwardly or of their own force dangerous or injurious to life, health or property.

"Under the present law, as it is phrased, such items, however useful or necessary they may be to art, industry and science, are unmailable. It is true the present law provides that the Postmaster General may admit them to the mails when prepared and packed for mailing according to regulations which Congress doubtless intended he should establish. Such regulation, however, does not exist. More than this it is doubtful whether the power granted to the Postmaster General is not an unconstitutional delegation of legislative power since section 217 creates an offense and then gives an administrative officer power to practically amend the penal law by admitting the prohibited articles to the mails under certain conditions.

"The amendment is believed to effect what Congress originally intended. Under it it will not be unlawful to mail poisons and articles and compositions containing poison not outwardly and of their own force dangerous, etc., if they are securely packed.

"The amendment goes further than this. It recognizes and confirms the power of the Postmaster General to prescribed rules and regulations for the preparation and packing of such articles for the mails; but it does not make the right to mail depend upon his exercise of that power.

"If the Postmaster General makes such rules and regulations then poisons and articles and compositions containing poison not outwardly and of their own force dangerous, etc., must be prepared and packed according thereto. This is in line with the decisions of the Supreme Court which have held that it is not unconstitutional for Congress to give executives the power to make administrative regulations, and when so doing to provide a penalty for the violation of such administrative regulations."

RESOLUTIONS PASSED BY THE PENNSYLVANIA PHARMACEUTICAL ASSOCIATION TO SHOW ATTITUDE ON U. S. PATENT LAWS.

WHEREAS, The pharmacists of the United States, owing to the European war, have been deprived of many of the chemical products used in medicine, and

WHEREAS, The American public is obliged to pay extravagantly high and unjustly extortionate prices for the synthetic drugs and medicines they are obliged to buy from foreign holders of patents on medicinal products, and

WHEREAS, The United States patent laws in granting product-patents, instead of process-patents to foreign manufacturers are hindering instead of "promoting science and useful arts" for which they are instituted, and

WHEREAS, The synthetic drug industry is primarily and basically dependent upon the dye-making industry, and as the dyestuff industry cannot be successfully carried on without ample tariff protection and the liberation of the infant American organic chemical industry from the bondage of American patent laws, which favor priority and deter invention and progress and which accord American protection to foreigners which their native countries deny them, and

WHEREAS, The present United States patent laws favor the creation of monopolies in this country by the citizens of Germany, France, Austria-Hungary, Italy, Japan and the Argentine Republic, which is denied the citizens of those countries by their own laws, and

WHEREAS, A patent on products creates a monopoly, not only on the product itself, but on all subsequent improvements in process for the making of the same, thereby destroying the stimulus for improvements and discovery through research, and

WHEREAS, The State of Pennsylvania, rich of minerals of both inorganic and organic nature, depends in a very great measure for its industrial development upon a properly ordered and organized chemical industry—Be it therefore

RESOLVED, That the Pennsylvania State Pharmaceutical Association go on record in requesting the Congressmen and Senators from Pennsylvania to strongly support the pending Tariff Bill, affording protection to American industries, and

BE IT RESOLVED, That a Bill be prepared for introduction in Congress through a Pennsylvania Congressman asking a change in the United States patent laws discontinuing the patenting of products but recognizing only applications for patents on processes, and, finally,

BE IT RESOLVED, That these resolutions be printed in the Proceedings and that a copy of these be forwarded to the President of the United States, the members of the President's Cabinet, the officials of the United States Patent Office, the Senators and Congressmen from Pennsylvania, the officers of the United States Chamber of Commerce, and every State business men's and labor organization in Pennsylvania, and also to the journals of the American Pharmaceutical Association, the American Medical Association, the American Chemical Society, the Saturday Evening Post, the Collier's Weekly, and to the Hon. Congressmen Paige and Hill from Connecticut.

WAR DEPARTMENT

List of changes of stations during August, 1916, in the cases of Sergeants First Class and Sergeants, Medical Department.

SERGEANTS FIRST CLASS.

Charles F. Kimball, from Ft. Greble, to the Walter Reed General Hospital.

Robert R. Linden from Walter Reed General Hospital, to Remount Depot, Ft. Reno.

Charles F. Eble from Ft. Leavenworth, to Hospital Train Southern Department.

Robert L. Edwards, from duty with the Organized Militia, State of N. C., to duty in the Southern Department.

Halbert M. Beasley, from duty with the Organized Militia State of Mass., to duty in the Southern Department.

Walter E. Fender, from duty with the Organized Militia, State of Ill., to duty in the Southern Department.

Edward M. Pennypacker from Ft. Wadsworth to the Southern Department.

Maurice Kelly from Ft. Monroe, to the Southern Department.

Daniel C. Donovan from Ft. Niagara, to the Southern Department.

Lonzo R. Bice, from Ft. Ontario, to the Southern Department.

Carl G. Bopp from West Point to the Southern Department.

Oscar Kaufer, from the Army & Navy Gen'l Hospital to the Southern Department.

Ethel H. James, from the Walter Reed General Hospital, to the Southern Department.

Leslie H. Stein, from Ft. Bayard, to the Southern Department.

Albert G. Fisher, from Washington Barracks to the Southern Department.

Gabriel Cushman, from Ft. Winfield Scott, to the Southern Department.

George H. Paul, from Ft. Columbia, to the Southern Department.

Burton Hardenbrook, from Ft. Missoula to the Southern Department.

Archie Coffie, from the U. S. Disciplinary Bks., Ft. Leavenworth, Kan., to duty in the Southern Department.

Ambrose A. Bush, from duty in the Canal Zone, Panama, to Ft. Bayard.

SERGEANTS.

Peter J. Scanlon, from the Army and Navy General Hospital, to the Southern Department.

David T. Goodyear, from the Army and Navy General Hospital to the Southern Department.

Charles Brown, from the Walter Reed General Hospital to the Southern Department.

Frank Sandlin, from the Walter Reed General Hospital, to the Southern Department.

Cecil A. Miam, from the Walter Reed General Hospital, to the Southern Department.

Harry Brown, from the General Hospital, Ft. Bayard, to the Southern Department.

Joseph Schneider, from the General Hospital, Ft. Bayard, to the Southern Department.

Joe C. Rousseau, from the Aviation School San Diego, Cal., to the Southern Department.

Samuel R. Parker from Ft. Slocum N. Y., to Washington, D. C., for duty at the Army Medical School.

Clarence E. Hoverter, from Ft. Terry, to the Washington Barracks.

BOOK NOTICES

Publications of the United States Public Health Service, July, 1916; *Miscellaneous Publications No.* 12.

This pamphlet of 68 pages prepared under the direction of the Surgeon-General contains a list of the publications of the United States Public Health Service which, as a part of the campaign for the improvement of health and the sanitary conditions throughout the nation issues periodical and special publications designed for free and judicious distribution while the supply lasts. Thereafter they may be purchased from the Superintendent of Documents, Washington, D. C.

The present list includes the Bulletins of the Hygienic Laboratory, Public Health Bulletins, Weekly Public Health Reports, reprints from the Public Health Reports, Supplements to the Public Health Reports, Annual Reports, Yellow Fever Institute Bulletins and Miscellaneous publications published to date.

The pamphlet includes a comprehensive index of 18 double-column pages, a review of which suggests that many of the publications listed are of direct interest to members of the drug trade. This list of the publications may be had by application to the Surgeon-General of the Public Health Service, Washington, D. C., and requests should specify both the title and number of the pamphlet.

Among the many bulletins of special interest to pharmacists that are available for free distribution, Hygienic Laboratory Bulletin No. 107—"Digest of the Changes and Requirements Included in the Pharmacopœia of the United States, Ninth Decennial Revision, and in the National Formulary, Fourth Edition with References to the Titles not Continued from the Preceding Edition"—should be of interest to all who are actively engaged in the drug business either as proprietors or clerks. The Hygienic Laboratory Bulletins are usually of a technical character and are chiefly of value to those who are interested in the scientific relating to diseases and public health.

The available supply of these bulletins for free distribution is limited and not more than one copy of any publication will be sent to each applicant unless some special and sufficient reason is given.

As noted above persons who are desirous of securing a copy of this publication should address the Surgeon-General, U. S. Public Health Service, Washington, D. C., asking for a copy of Hygienic Laboratory Bulletin No. 107: "Changes in the Pharmacopœia and in the National Formulary."

JOURNAL ANNOUNCEMENTS.

Subscriptions: Annual subscriptions in advance, including postage: United States and Mexico, $4.00; Canada, $4.35; foreign countries, $4.50. Single copies, 35 cents. Remittances should be made payable to Treasurer H. M. Whelpley, but mailed to JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 253 Bourse Building, Philadelphia, Pa. Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers.

Requests for Back and Missing Numbers: Requests for back and missing numbers should be sent to the Editor. Claims will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from date of issue. Notice of change of address should give old and new address.

Contributions: The JOURNAL accepts no responsibility for the opinion of its contributors. Contributions should be sent to the Editor; use only one side of the sheet for writing, and double-space the lines. Articles are accepted for publication on condition that they are contributed solely to this JOURNAL; and "all papers presented to the Association and its Branches shall become the property of the Association, with the understanding that they are not to be published in any other publications than those of the Association, except by consent of the Committee on Publication." (By-Laws, Chapter X, Article 11.)

Reprints: Authors may obtain reprints of the J. B. Lippincott Company, Philadelphia, Pa., at the prices attached to the proof sent them, provided the order is received before the type has been distributed. The prices are also given on this page.

Advertisements: Communications relating to advertising should be sent to the Editor. Forms close on the first of each month, and copy should be in by the fifteenth of the month preceding date of issue, to receive proof. Date of issue—the fifteenth of the month. Advertising rates sent on request.

Membership: Applications for membership in the American Pharmaceutical Association may be made of any of the officials. The annual payment of five dollars covers the annual dues and subscription to the JOURNAL. Members receive, also, the publications of the Association that are distributed free of charge.

Further information will gladly be furnished by any of the officers of the Association and members.

Cost of Reprints: Reprints will be furnished at the following prices:

	No cover.	With cover
100 copies, 4 pages ..	$2.50	$4.50
200 copies, 4 pages ..	3.00	5.50
50 copies, 8 pages ..	2.75	4.50
100 copies, 8 pages ..	3.50	5.00
200 copies, 8 pages ..	4.50	6.50
50 copies, 12 pages ..	3.75	4.75
100 copies, 12 pages ..	4.75	5.75
200 copies, 12 pages ..	5.75	6.75
100 copies, 16 pages ..	6.75	7.75
200 copies, 16 pages ..	7.50	8.50

Orders may be sent to J. B. Lippincott Company or JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 253 Bourse Building, Philadelphia, Pa.

REQUEST FOR BACK NUMBERS OF THE JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

The American Pharmaceutical Association would be pleased to receive back numbers of the JOURNAL. There are some who have duplicate copies, and their consideration would supply the wants of others. The JOURNALS should be addressed to THE JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 253 Bourse Building, Philadelphia, Pa. Only the following numbers are desired:

1912	1914	1915	1916
April	August	January	January
May	September		February
	October		March
			April